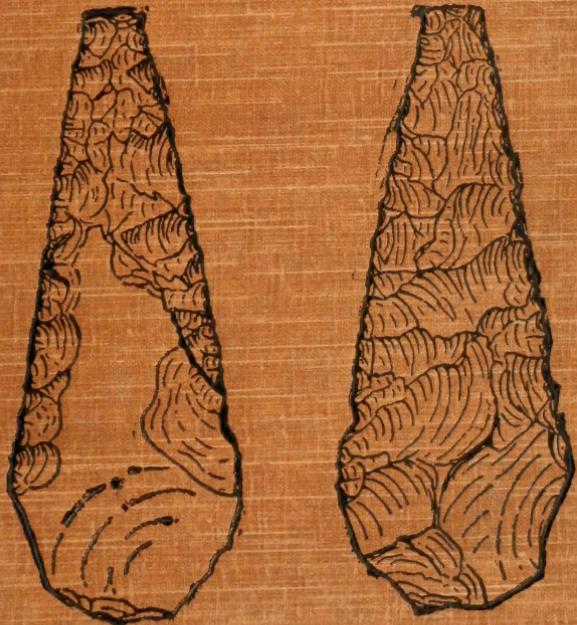


31761 071352009

THE  
PRE-HISTORIC PERIOD  
IN SOUTH AFRICA



H&SS  
A  
5066

J. P. JOHNSON

NEW & ENLARGED EDITION

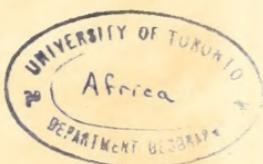


Digitized by the Internet Archive  
in 2010 with funding from  
University of Toronto

G. Taylor. — Melbourne.

With the Author's

Compliments.





THE PRE-HISTORIC PERIOD IN  
SOUTH AFRICA.



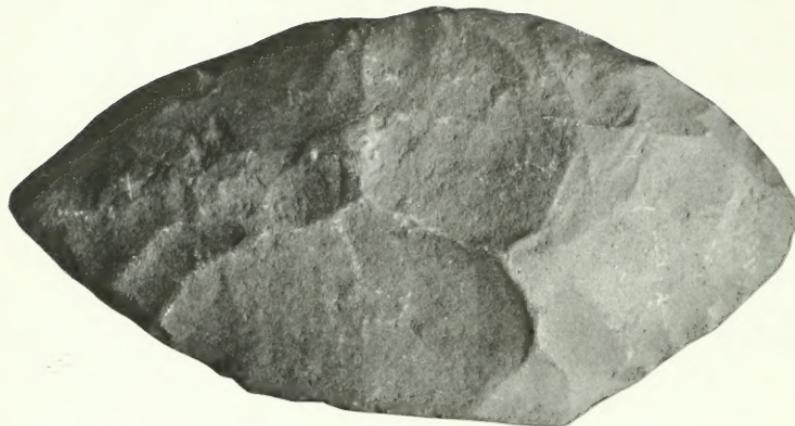


B

PLATE I.—ACHEULEIC AMYGDALITHS.

(A) ACHÉULEEN FORM FROM ROBINSON.  
THE FIRST FROM MR. LOXTON'S COLLECTION.  
(B) LUCKHOFFIAN FORM FROM BARKLY.  
SCALE ABOUT  $\frac{2}{3}$ .

A



THE  
PRE-HISTORIC PERIOD  
IN  
SOUTH AFRICA

BY

J. P. JOHNSON

*Member of Council of Geological Society of South Africa,  
Author of "Geological and Archaeological Notes on Orangia," "The Stone  
 Implements of South Africa," "The Mineral Industry  
 of Rhodesia," &c.*

SECOND EDITION, REVISED AND ENLARGED.

WITH A MAP.

LONGMANS, GREEN AND CO.  
39 PATERNOSTER ROW, LONDON  
NEW YORK, BOMBAY, AND CALCUTTA  
1912

[All rights reserved.]





## PREFACE TO FIRST EDITION.

---

THE object of this volume is to give a brief summary of our knowledge of the pre-historic period of South Africa.

With the exception of the part treating of the ruins north of the Limpopo, the book is based almost entirely on my own researches. Much of the data relating to the petroglyphs and rock-paintings, however, were obtained as member of the Commission (consisting of Professor R. B. Young, of Johannesburg, Mr. T. N. Leslie, of Vereeniging, and myself) appointed by the Government to report on these relics of primitive art.

While much detail remains to be unearthed, the main characteristics of the pre-historic cultures of South Africa may now be said to be definitely determined.

P.O. Box 6231, JOHANNESBURG.

*July, 1910.*

*Ideloo, Tamar Valley  
Tasmania.*

---

## PREFACE TO SECOND EDITION.

---

THE publication by Dr. Peringuey of the material in the Capetown Museum has enabled me to extend the scope of this book to the Coast Middens. My own contributions are fewer than hitherto, as I no longer have the opportunity of field work, but the new data regarding Bantu Buildings appear to me to be of special interest. The most important addition, however, is the Appendix, by Mr. Kennard: it treats more fully of the section upon which my Introduction is based, and in greater detail than would have been desirable there. I am indebted to Mr. Leslie for the photographs from Vereeniging, to Mr. Franklin White for those of Zimbabwe, and to Dr. Gunning for those of petroglyphs in the Pretoria Museum.

P.O. Box 6231, JOHANNESBURG.

*May, 1912.*



## CONTENTS



		PAGE
CHAPTER	I. INTRODUCTION ... ... ... ...	1
CHAPTER	II. THE EOLITHS OF LEIJFONTEIN ... ... ...	12
CHAPTER	III. ACHEULIC IMPLEMENTS ... ... ...	18
CHAPTER	IV. SOLUTRIC IMPLEMENTS ... ... ...	29
CHAPTER	V. ACHEULIC AND SOLUTRIC GROUPS ... ...	33
CHAPTER	VI. SOLUTRIC SITES ... ... ...	40
CHAPTER	VII. THE COAST MIDDENS ... ... ...	50
CHAPTER	VIII. PETROGLYPHS AND ROCK-PAINTINGS ... ...	57
CHAPTER	IX. THEORETICAL INFERENCES ... ... ...	72
CHAPTER	X. THE PRE-HISTORIC BANTU ... ... ...	80
APPENDIX	I. ... ... ... ...	94
APPENDIX	II. ... ... ... ...	103
	INDEX TO PLACE-NAMES ... ... ... ...	114
MAP	... ... ... ...	116



## LIST OF PLATES.

---

### PLATE I.—ACHEULIC AMYGDALITHS.

(A) Acheuléen form from Robinson, (B) Luckhoffian form from Barkly. The first from Mr. Loxton's Collection. Scale about  $\frac{3}{4}$ .

### PLATE II.—ACHEULIC CELTS.

(A) Acheuléen form from Robinson, (B & C) Luckhoffian forms from Luckhoff and Vereeniging. The first and last from Messrs. Loxton's and Leslie's Collections. Scale about  $\frac{1}{2}$ .

### PLATE III.—SOLUTRIC PETROGLYPHS.

(A) Eland pecked on rock, Vereeniging. (B) Eland scraped on rock, Biesjesfontein.

### PLATE IV.—SOLUTRIC PETROGLYPHS.

Advanced examples in the Pretoria Museum.

### PLATE V.—ZIMBABWE RUINS.

(A) Exterior of Main Building, shewing Chevron Pattern. (B) Interior of Main Building, shewing Cone, etc.

### PLATE VI.—ZIMBABWE RUINS.

(A) Sandstone Post with Curved Base and Crocodile. (B) Monoliths near West Entrance of Main Building.

### PLATE VII.—PLAN OF NANATALL (after Mr. Lopham).

Shewing Cement Platforms. From Proc. Rhodesia Scientific Assoc.

### PLATE VIII.—BANTU BUILDINGS.

(A) Entrance to Ruined Kraal, and (B) Entrance to Inhabited Kraal, Masibi's Location.

### PLATE IX.—BANTU BUILDINGS.

(A) Remains of Stone Hut. (B) Modern Mud Hut, with Woman grinding meal (with stone grinder on stone slab) in front. Masibi's Location.



# THE PRE-HISTORIC PERIOD IN SOUTH AFRICA.

## CHAPTER I. INTRODUCTION.

GEOLOGICAL and archæological research has established a definite sequence in the primitive cultures of the Old World, and it is desirable to briefly review the nature of the geological evidence and the character of the archæological data before proceeding to consider the South African remains.

Of the geological data requisite for the determination of the relative age of different early archæological remains, that afforded by river terraces is the most important. A river in the course of its excavating career frequently leaves strips of drift behind on the sides of the valley it scoops out. Usually it has alternating periods of excavation and deposition, that is, after excavating the valley to a certain depth it proceeds to deposit gravel or other sediment in it for a time, after which it begins to excavate again, and so on. Normally the new channel does not occupy the whole width of the valley bottom, so that a strip or terrace of drift is left behind on one or both sides. Wherever there is a succession of such terraces it follows that the highest is the oldest. Further, owing to the protection from denudation afforded by gravel to the underlying rocks, it often happens that the ancient river terrace eventually comes to occupy the top of a ridge, and is finally reduced to a mere capping to one or more hills. Patches of river drift occupying the tops of hills are, necessarily, very ancient.

Contemporary objects, such as stone implements and bones of

animals, found in a hill-gravel, will, therefore, be more ancient than those found in the valley-drifts of the same drainage area ; and those from the high-level terraces will be older than those from the low-level terraces.

The value of the evidence afforded by river terraces is well illustrated by the accompanying section (Fig. 1) by my friends, Messrs. Hinton and Kennard, through the Thames Valley, Britain, in which the broader divisions of the culture sequence above referred to are plainly indicated. It is obvious that the gravel on the top of the hill is older than the terraces of drift on the sides of the valley, and that the latter are in turn more ancient than the alluvium bordering the modern river.

#### EOLITHIC GRAVELS.

The patch of gravel on Swanscombe Hill is one of a number of similarly situated deposits scattered over the extreme south of Britain. They are generally considered to be the remnant of the drift deposited by rivers which were in existence long before the drainage system of the country had assumed its present form. Their exact geological age is uncertain, for, owing to their porous nature and great antiquity, any animal remains that may have been enclosed in them, and by which they might have been dated, have, as a rule, since perished. There is one exception, however, for in a patch at Dewlish remains of an extinct species of elephant—the *Elephas meridionalis* of Nesti—have been found in some quantity. This occurrence, as will be seen later, though not fixing the exact minor geological epoch, is of great significance.

Now, these deposits have yielded some rudely chipped fragments of flint—in other words, Eoliths—which are claimed by many to represent man's very earliest attempts to trim a piece of stone to a shape suitable for use as an implement.\* These implement-like fragments consist of naturally broken pieces of flint with secondary chipping along the edges, and resemble the small scraping tools of later periods.

\* A well illustrated description by Mr. Grist of the Dewlish deposit and its contained Eoliths is published in the Journal of the Anthropological Institute, Vol. XL, p. 192 208 (1910).

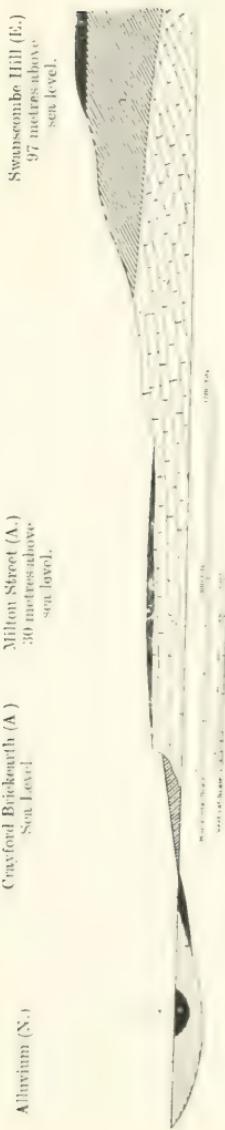


FIG. 1.—SECTION THROUGH THE TERRACES OF THE THAMES VALLEY, BRITAIN. (After *Messrs. Hutton and Kennedy*.) E = Eolithic. A = Achaean. N = Neolithic.

While the writer is inclined to the opinion that these are implements, the problem of whether they are natural or artificial productions cannot yet be said to be solved.

#### ACHEULIC TERRACES.

The two succeeding terraces contain flint implements that are very far removed from man's first artefacts, whether the Foliths be these last or not. They are termed Acheulic.

Man had no longer any need to search for conveniently shaped splinters as he had now learnt to make them for himself. The method employed was to first obtain a flat surface by breaking off the end of a nodule or pebble of flint, and then driving off slices at right angles to it by sharp blows with another stone. These artificially produced splinters or *flakes* are sometimes trimmed on the one hand into forms resembling the Foliths, and on the other into tools resembling the scrapers and allied implements of the Neolithic period.

The characteristic implements of the Acheulic period are the amygdaliths.\* Examples are known from both terraces, but they occurred in enormous quantities in the upper terrace at Milton Street, where I obtained a large collection some years ago. These consist of flint nodules skilfully chipped, sometimes into delicate tapering points and sometimes into thin flat blades, though more generally into a form intermediate between the two, the broader end being left unworked. During the deposition of the Milton Street gravel it must have been repeatedly visited by man, no doubt attracted by the abundance of suitable material, for the purpose of manufacturing these implements. They occurred throughout the gravel and, in places, interstratified with seams full of delicate river shells. In some of the excavations in it one could always find more flakes than one could carry away with them, and there was not a single large piece of flint to be found that had not been artificially chipped. The flakes are mostly rough and large, and would appear to be chiefly the result of the preliminary reduction in size of the

\* The name 'amygdalith' was given to the typical Acheulic implement and its variations by the writer in his *Geological and Archaeological Notes on Orangia*, and was also used throughout the earlier edition of this book. More recently Dr. Sollas has used the French term 'boucher' in a similar sense.

larger nodules prior to their conversion into amygdaliths. The amygdaliths were found in every stage of manufacture, ranging from nodules from which only one or two chips had been struck, to approximately finished implements; these last differ very much in size and exhibit considerable diversity of form. Failures and broken implements that had been re-pointed were common. Of extreme rarity were amygdaliths with the edge continued round the broad end. A not uncommon implement consists of a large flake trimmed on one face only.

I am not aware that any amygdaliths have been found in the Crayford brickearth, but they occur at this horizon in other parts of the valley, the form with edge continued all round being preponderant. From a site of manufacture near the base, quantities of long narrow flakes have been obtained: they are more skilful productions than any that have been found in the Milton Street terrace, and were probably intended for use as knives, spear-heads, etc.

Besides the implements, the two terraces have yielded the remains of a most remarkable assemblage of animals. In them are found the bones of beasts, of which some have completely disappeared from the face of the earth, while others are now only met with in different and widely separated parts of the world. The extinct vertebrates comprise the *trogontherium*, two species of fallow-deer, three rhinoceroses, two elephants, a bear and a vole. The *elephas meridionalis* is no longer met with, its place being taken by the *elephas primigenius*. Those of the existing species that did not survive the Acheulic period in Britain, include such diversely distributed animals as the hippopotamus, spotted hyaena, and lion, which are now practically confined to the continent of Africa, and the musk-ox, whose habitat at the present day is restricted to the Arctic regions of America. Another group, which includes two voles, the saiga and the souslik, is to-day characteristic of the Eurasian steppes. Two species of lemming are also comprised in this remarkable fauna; the one is now a purely Arctic animal and the other survives only in Scandinavia. Two more voles and a bison complete the list, while the beaver, urus, reindeer, wolf and bear, which appear to have lived on into the Neolithic period, must also be mentioned as interesting members of the Acheulic fauna.

### NEOLITHIC ALLUVIUM.

The newest deposits—the beds of clay, mud and peat, which make up the alluvial flats bordering the river—contain implements and other relics that mark yet another revolution in the manufacture of stone implements. They constitute a record of the Neolithic period. These occur in the lowest and oldest layers only, for the upper beds range in age from the prehistoric bronze and iron epochs, right up to historic times. Of the implements found in the Neolithic alluvium, flakes and scrapers constitute the vast majority; the former are always neat and small and seldom attain the size of the average Acheulic flake, while minute examples with three or more facets and a well-developed bulb of percussion, are not uncommon, which shows that the art of producing flakes had now reached its highest. The other implements are still more different. The amygdaliths of Acheulic times are replaced by thin, symmetrical, and skilfully chipped javelin-heads, which are often neatly and uniformly notched on either side to facilitate the hafting; by beautifully finished daggers, not unlike the javelin-heads, but usually with a distinct handle worked at the end of the flat blade; and by axe-heads with a straight or slightly curved ground edge. The last mentioned are usually more or less polished all over. While evidence of the knowledge of the bow appears for the first time in the shape of often exquisitely finished arrow-heads.

### SOLUTRIC SITES.

While the definite sequence and distinct facies of the three above-mentioned groups is all that can be desired from a classificatory point of view, the geological position and archæological characteristics of others are not so well defined. To the latter category belongs another group of stone implements that has to be mentioned here, namely, the Solutric. These are well represented in West Europe, where they are found on the sites of ancient settlements, in caves and underneath rock-shelters. The animal remains found with them are similar to those of the Acheulic river deposits, hence many regard the Acheulic and Solutric implements as contemporary.

The Acheulic stage of culture is represented solely by the stone implements upon which it is based. While the Acheulic implements are nearly all amygdaliths, the Solutric implements are nearly all small scrapers; they are thus probably complementary to one another, which circumstance also suggests that they may be contemporary.

The absence, however, of the Acheulic amygdaliths from the Solutric sites,\* and the frequent presence of a far more advanced type—the *feuille de laurier*—makes it improbable that the two are of the same age.

Solutric sites are widely distributed over West Europe, and many of them have been inhabited at different epochs. The Solutric stage itself was of very long duration in that area, and many archæologists claim to recognise three successive phases of it, namely, the Aurignacien, Solutréen, and Magdalénien, each characterised by a distinct assemblage of implements, though others see in these assemblages only a different facies of contemporary work.

Of the puny frames of the men whose cultural status is so abundantly attested by their almost imperishable stone implements, remains are meagre indeed. One would not, of course, expect to find them in the Eolithic gravels, where only the massive bones of the *elephas meridionalis* appear to have survived, and, in fact, none of such remote antiquity have been discovered anywhere in West Europe. Even in the high-level Acheulic gravels, the bones of the larger animals are only preserved in exceptional circumstances, and in the low-level brickearths appear for the first time in any quantity.

Among the few undoubtedly contemporaneous skeletons found associated with Acheulic and Solutric implements in West Europe, there are two quite distinct groups; a presumably primitive group with retreating brow, massive jaw, and absence of chin, and a presumably advanced group, with these parts of the skull differing little, if at all, from those of the modern European. The former is the well-known Neanderthal group, and is best represented by the skeleton discovered by Messrs. Bardon and Bouyssonie at Chapelle-

---

\* Acheulic amygdaliths would appear to have been found on Solutric sites on one or two occasions, but whether of greater age or whether contemporary survivals, they are a negligible quantity compared with the numerous Solutric amygdaliths.

aux-Saints. It had been buried in a shallow trench, and was covered by an Acheulic stratum, probably contemporary with the low-level brickearth of our section, together with bones of rhinoceros, bison, reindeer, and horse. Examples of this group are also known from Solutric (Aurignacien) sites. The latter is well represented by the skeleton found by Herr Hauser on the Solutric site at Combe-Capelle.\* It also had been buried in a shallow trench, but on its skull was a band of shells, and by its side a number of typical Aurignacien implements. Allied to this type are the so-called negroids, referred to later, and the well-known taller Cro-Magnon type.

Of the Neolithic men burials are less scarce, but they do not come within the scope of this book because, while Eolithie, Acheulic, and Solutric chipped stones are well represented in South Africa, no true Neolithic implements have yet been found in the sub-continent.

#### ACHEULIC AND SOLUTRIC IMPLEMENTS IN SOUTH AFRICA.

In much dissected areas, such as most of West Europe, the older of the stone implements that have been left on the surface from time to time, have been gradually washed down into the valleys, where they have become incorporated in the deposits there in process of formation. But in tracts of flat country, such as make up so large an area of South Africa, where there are no valleys for the implements to drift into, they remain on the surface, mingled with disintegration products, until destroyed by weathering.

In South Africa Acheulic amygdaliths are sometimes met with in quantity in association with terraces situated at some height above the present rivers, but it is uncertain whether they were contemporary with the formation of these terraces or whether they were merely manufactured on top of the terraces at a subsequent period. Such terraces afford suitable material for the making of amygdaliths, and would, no doubt, be resorted to for that purpose. The Acheulic amygdaliths are, however, known to occur in terraces situated at but a slight elevation above the present rivers and in old talus deposits. Isolated surface specimens are not uncommon, and

\* An almost identical skeleton was found in a stratum towards the base of the Milton Street gravel, but its contemporaneity is doubtful.

having readily attracted the attention of the curio collector, are now known from many parts reaching from the Zambezi to the South Coast, but, unfortunately, the conditions under which they occurred and which might have afforded some evidence as to whether they were washed out of a deposit or actually dropped on the present surface, have seldom been recorded.

Solutric sites are widely distributed over South Africa. They are unquestionably newer than the river gravels and taluses that have yielded Acheulic amygdaliths, and when covered over with deposits these last are merely rain-washes, or blown sand, of comparatively recent date. The South African evidence is thus also in favour of the view that the Solutric implements are more recent than the Acheulic, though it is not sufficient to be conclusive. The problem, however, will be discussed more fully in a later chapter.

#### SOLUTRIC ART.

Both in West Europe and South Africa, the Solutric stage was characterised by a great development of the artistic faculty. Its most interesting manifestations remain to us in the form of engravings and paintings found on the walls of caves and on the back of rock-shelters, and between those of the two areas there are remarkable resemblances, though there are naturally many differences also.

This work, though primitive, by no means represents man's first attempts. One of its most striking features is the bold and unfaltering delineation of the objects depicted. But whether it had its birth in some earlier phase of culture or whether it originated in the Solutric stage is uncertain. Of the rude beginnings from which this comparatively advanced art must have grown there are no traces. No doubt they were of a perishable kind, such as drawings made on the ground with the finger or with a pointed stick, and perhaps only the work of the specially gifted was, for various reasons, done in the durable form on rock.

From what is known of existing primitive peoples, who are, so to speak, survivals from the prehistoric period, it is inferred that most of these petroglyphs and rock-paintings are of an utilitarian character connected with the primitive belief in sympathetic

magic, and are not the expression of a delight in art, while others are of the nature of pictorial records. They, nevertheless, indicate a considerable development of the aesthetic sense.

So far as at present known the Solutric petroglyphs and rock-paintings of West Europe are mainly confined to a comparatively small portion of that area, namely, the Dordogne and the Pyrenees. These all occur in caves, and often in the inner recesses where the light of day never penetrates, and thus differ from those of South Africa, which are always situated in the open.

Prof. Breuil, who has investigated most of these occurrences, says that while they all belong to the one stage of culture, they represent every moment of its existence, which was of long duration, in that area. In those caves that have been occupied at successive epochs one can often establish by a careful examination the relative age of the different designs. Prof. Breuil, as a result of a comparison of the different occurrences, states that they exhibit a distinct sequence of development that affected the whole area.

The engravings and paintings had a parallel evolution, but whereas at the beginning they were separate, at the end the former, apart from numerous light scratchings, were mainly auxiliary to the latter. The objects illustrated are nearly all animals, but geometric figures or symbols also occur. Both engravings and paintings started as silhouettes, crudely executed in outline, but at the time of amalgamation the engraved outline had attained much merit, and the painted body, which was always in red or black monochrome, was shaded. At this stage a decadent type of painting, in which shading was discarded and the outline merely filled in with a uniform tint, was introduced; it does not seem to have stayed long, but it has a very considerable interest in that it is the dominant type in South Africa. Ultimately fine shaded polychrome paintings came into vogue.

Recently rock-paintings in the open have been discovered in the lower basin of the Ebro.

The Solutric petroglyphs and rock-paintings of South Africa are distributed over the whole area. The former are mostly found on boulder-like outcrops of rock, either among kopjes or in the open veld, while the latter are chiefly met with on rock-shelters. The

objects illustrated are mostly animals and men which, except in comparatively rare instances, are shown in silhouette only. The petroglyphs are usually larger than the paintings, and, as a rule, represent disconnected units only, whereas the paintings frequently depict connected objects such as the participants in a hunt or fight. Many of the more advanced paintings constitute intelligible records of customs and myths. Geometric figures or symbols are abundant.

I have already noted some differences between the Solutric cultures of West Europe and South Africa. There are, however, two of outstanding importance that I have not yet mentioned. One is that the Solutric implements, petroglyphs, and rock-paintings of West Europe, though presenting a large number of identical forms, are very much bigger than those of South Africa.\* The other is that the petroglyphs of West Europe are lacking in a type, namely, the pecking, that is abundant in South (and North) Africa. From which one may infer that the Solutric peoples of Africa did not come from Europe, nor *vice-versâ*, but that the Solutric peoples of Europe and Africa were separate migrations from the East.

---

\* The South African implements, however, are paralleled in this respect by the similar assemblage described by Dr. Schwenfurth from Sicily, in *Zeitschrift für Ethnologie*, VI., 832-906 (1907).

## CHAPTER II.

## THE EOLITHS OF LEIJFONTEIN.

IN several places on the farm Leijfontein, which is situated below the Campbell Rand, near Campbell village, there are patches of gravel lying at the foot of the escarpment. This gravel consists mainly of subangular fragments of jasper—a material that has travelled a long way, the nearest source being the Asbestos Hills, some fifty kilometres to the west. While it apparently can only have been brought to its present position by water, it has no evident connection with any existing river, and is, therefore, probably of very great antiquity. The jasper has changed externally from its original dull brown colour to a yellowish-brown, and acquired a high glaze of polish.

Mixed with the gravel are quantities of much worn and highly glazed Eoliths.\* A few of these differ from the true Eoliths in being shaped from artificially produced splinters, or flakes, but they are a small minority. Otherwise the group is in every way identical with the typical assemblage met with in the hill drifts of Southern Britain.

Although attention was drawn by Prof. Prestwich to the hacked or rudely chipped stones discovered by Mr. Benjamin Harrison, which are now termed Eoliths, as far back as 1889, their origin—whether artificial or natural—is still the subject of controversy. While some authorities unreservedly accept the trimming as the work of man, others are equally emphatic in denying its artificial

\* I would remark that, having a large number of Eoliths from the type locality, namely, the Kent Plateau, found by myself, there can be no question of the correctness of this identification.

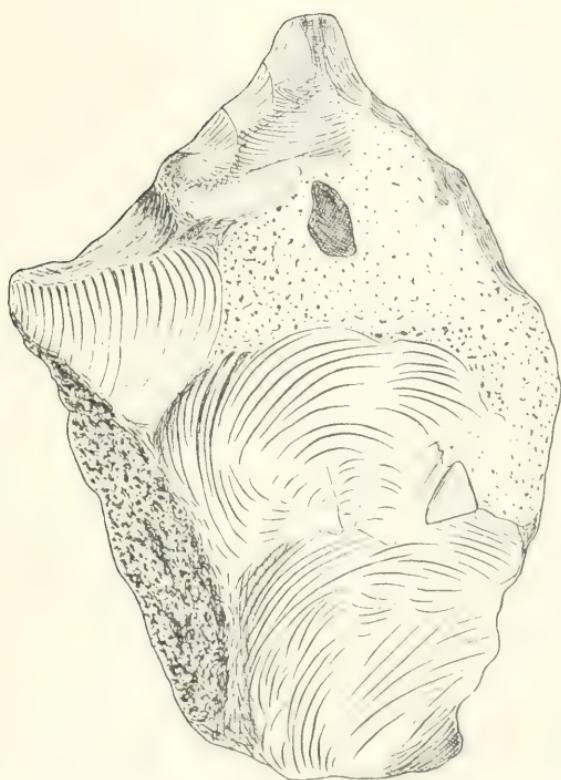


FIG. 2. POINTED EOLITH FROM THE KENT PLATEAU,  
BRITAIN. (*Actual size.*)

A large form comparable to the amygdaloliths of a later period.

character. The specimens from Leijfontein throw considerable light on this matter, and incline me to the opinion that they are in truth primitive man's first attempts to trim pieces of stone to a useful shape.

The Leijfontein Eoliths and Flake-Eoliths may be subdivided in the same way as Prof. Prestwich divided the typical Eoliths, that is, into two sub-groups : (1) Those in which the pieces of stone have been subjected to very little modification ; and (2), those in which they have been chipped into definite shapes.

It would be difficult to see any artificial character in the chipped pieces of stone of the first sub-group if found alone. Their great abundance and the haphazard appearance of the chipping immediately suggests that they have been shaped by the blind forces of

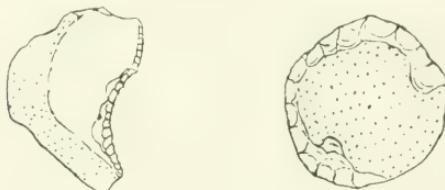


FIG. 3.—NEOLITHIC CONCAVE AND CIRCULAR SCRAPERS  
FROM BRITAIN. (*Actual size.*)

nature. Both circumstances have been brought forward as evidence against their possibly artificial character. Nevertheless, Acheulic, Solutric, and Neolithic implements are often met with in equal quantity, while, if the Eoliths are, as is claimed, man's first artefacts, one would expect them to be barely distinguishable from nature's work. Their association with others in which the trimming, though of the same rude kind, is arranged in definite patterns is the sole ground upon which they can be accepted.

Even the more implement-like examples of the second sub-group are of so primitive a kind that their possibly artificial character is still disputed by many. Yet, apart from the necessarily inferior quality of the trimming, and the fact that most are fashioned out of naturally broken fragments of stone, they are largely identical with the commoner accepted flake-tools of the Neolithic period.

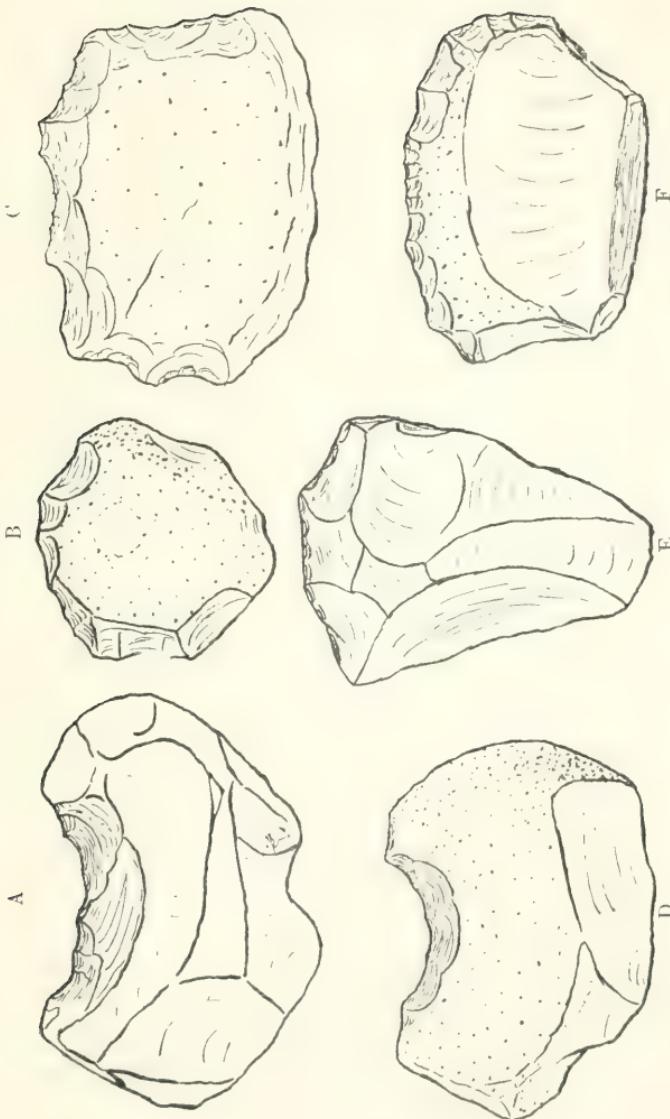


FIG. 4. EOLITHS FROM LEIFONTSTEIN. (*Actual size.*)

Two series of the more differentiated Eoliths and Flake-Eoliths are represented by the accompanying illustrations (Figs. 4 and 5).

Figure 4 shows a series of straight, concave, and convex-edged forms resembling the scrapers of the Neolithic period. A, B, and C are true Eoliths, while D, E, and F are Flake-Eoliths. A and D are good examples of the concave form. It will be noticed that there is quite a wide difference in the quality of the chipping in these two. There is a much greater difference between the better of these and the Neolithic example (Fig. 3), but I have South African Acheulic and Solutric specimens which fill the gap. There is no essential difference between the disputed Eolithic examples and the accepted Neolithic ones. B, C, E, and F are four commonly recurring forms, usually designated by the descriptive adjectives, circular, rectangular, long and broad. All of these can be matched by Neolithic examples, while one is still to be counted among the domestic appliances of certain savage peoples. Compare the circular scraper with the Neolithic specimen (Fig. 3). Here, again, I can produce South African Acheulic specimens intermediate as regards quality of chipping. This progression in delicacy of trimming is carried a stage further in some remarkably little examples found among the Riverton series, described in a later chapter: they are about one half the size of the Neolithic example.

Figure 5 shows some typical Eolithic forms that are seldom met with among Neolithic implements. In A and B it will be noticed that the chipping of the one edge is in the reverse direction to that of the other, while in C, D, E, and F both edges are chipped on the same side. They are eloquent advocates of the artificial character of the Eoliths, for it seems improbable that long tapering points like that of F could be hacked out by blind agencies.

Prof. Rupert Jones has drawn attention\* to the discovery by Dr. Leith at Pretoria of chipped stones resembling Eoliths, but I have not seen the specimens.

There are no geological data available for determining the relative age of the Eoliths of Leijfontein and the Acheulic amygdoliths of the South African river deposits.

---

\* *Journ. Ant. Inst.* XXVIII., p. 52 (1898).

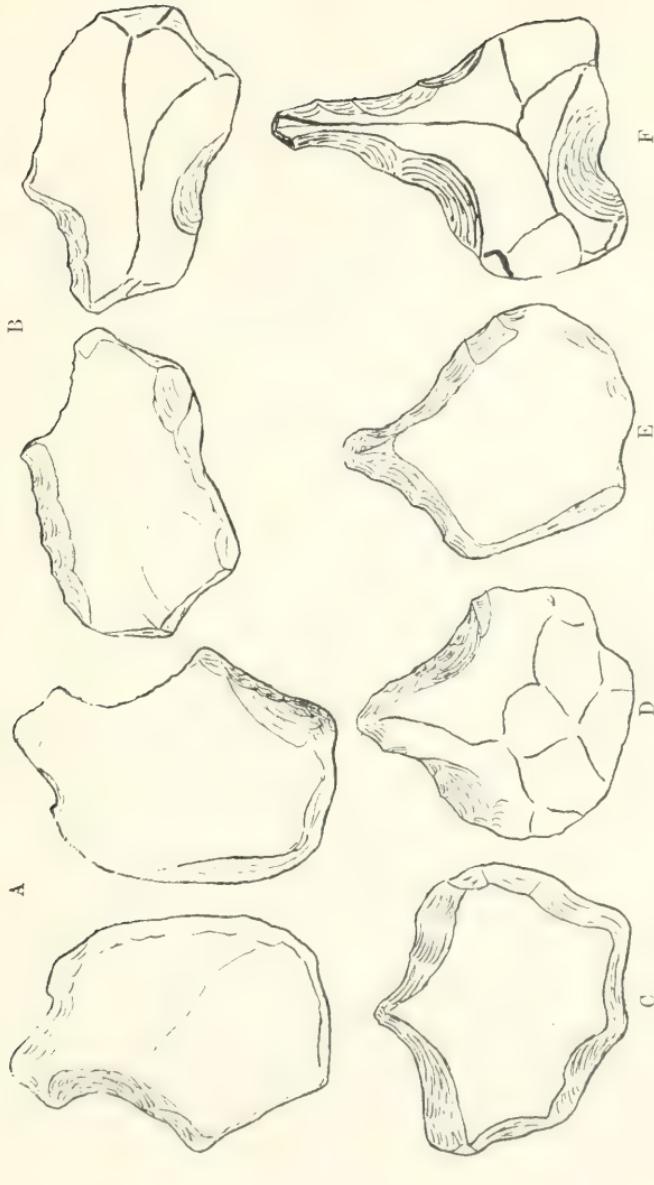


FIG. 5.—EOILITHS FROM LEIJFONTEIN. (Actual size.)

## CHAPTER III.

### ACHEULIC IMPLEMENTS.

ONE may safely express the opinion that Acheulic implements are distributed throughout the length and breadth of South Africa. I have found them, usually in association with old terraces, in the valleys of the Zambesi, the Elands-Rustenburg, the Magalakwin, the Selati, the Olifants, the Komati, the Vaal, the Caledon, the Orange\*, and the Zwartkops, at Algoa Bay, while Dr. Péringuey† has noted their widespread distribution in the old taluses of the mountain ranges skirting the south coast. Here, however, I purpose only to describe those discoveries that throw some light on the problem of their age.

At this point it is perhaps desirable to explain the terms Chelléen, Acheuléen, and Moustérien. In my introductory remarks I have referred to the amygdaliths with the broader end left unworked and to the type with the edge continued all round, also to the large flakes trimmed on one face only. Now, in Europe occurrences are known in which each of these forms is present to the exclusion of the others, though they are more frequently found together, and it is to these distinct assemblages that the above terms have been applied. It is considered by many that the Chelléen flourished at the beginning of the Acheulic stage, and that the Moustérien predominated at the end, but this theory lacks proof.

\* For details of these occurrences see *The Stone Implements of South Africa*. I can now add to my discoveries a much worn amygdalith of quartzite from the bed of the spruit between Manyamba farm and Shiwara's kraal, north west of Salisbury. I may also mention here the occurrence of the characteristic large Acheulic flakes in gravelly detritus at a spot, shewn me by my friend Mr. Atkin, at the foot of the kopjes at Gwelo.

† Annals of the South African (Capetown) Museum, VIII. (1911).

The terms, however, are convenient to indicate assemblages in which one or the other forms greatly preponderates, but it is misleading when applied to isolated specimens, since it is obvious that an unfinished Acheuléen amygdalith is of Chelléen form, while contemporary Moustérien forms are nearly always present at Acheuléen occurrences.

The Acheulic assemblages of South Africa range from those that appear to be more primitive than the typical, to those that are certainly more advanced: the former of which Roode Kop affords an example, are characterised by what seem to be prototypes and crude forms of amygdaliths, while the latter, which are well represented from Vereeniging and Luckhoff, are characterised by axe-like forms or *celts*.

Among the amygdaliths every gradation is met between the thick Chelléen form with unworked butt, the thinner Acheuléen type with edge carried all round, and the proto-Solutréen form pointed at both ends. A similar gradation is observable between these, the Moustérien forms and the celts.

These celts also exhibit a wide range of variation, and three conspicuous varieties may be mentioned now: (1) A form consisting of a broad rectangular blade, like that of the ordinary modern axe used for tree-felling, (2) a type with incurved sides, and (3) a form with a narrow blade and rounded top, similar to the common and well-known Neolithic axe-head. Of these the last two are only known from Barkly, Vereeniging, and Luckhoff.

#### ROODE KOP.

On the top of this hill, which is situated south-east of Johannesburg, are sundry patches of drift, consisting mainly of small boulders and more or less angular pieces of quartzite, from which I have obtained a quantity of quartzite implements.

The assemblage comprises two main elements, (1) flakes with an Eolithic style and quality of trimming, and (2) pieces and rough discs of quartzite with an edge worked along a portion of the periphery that appear to be forerunners of the typical Acheulic amygdaliths.

If the peculiar trimming that is the essential characteristic of the Eoliths, be due to natural causes, then the trimming of these

flakes is also due to natural causes, and the undoubtedly-edged stones may merely be makeshift or unfinished examples of Acheulic work. If, however, it is artificial, then the assemblage under consideration must be intermediate between the typical Eolithic and the typical Acheulic.

The assemblage includes true Eoliths. The majority of the implements are worn, but the deposit has also yielded a number of quite sharp and fresh-looking flakes, as well as one or two equally unworn implements suggestive of unfinished or primitive amygdaloliths.

#### VICTORIA FALLS.

A good example of the possibilities that may be suggested by the geological conditions under which implements occur, and of the difficulty of obtaining decisive geological evidence of their age, is afforded by the occurrence at the Victoria Falls.

Mr. Fielden\* pointed out that there Acheulic amygdaloliths were associated with gravels bordering the river not only above the Falls where they are at but a slight elevation above the river, but also below the Falls where they overlook the canyon in which the river rushes more than a hundred metres below; and concluded that the pebbles and implements were deposited there by the Zambezi when it flowed over these surfaces prior to the excavation of the chasm. If this conclusion were correct it would indicate an unparalleled antiquity for the Acheulic period.

Mr. Codrington,† on the other hand, after an extended examination of the neighbourhood, concludes that the gravels are not remnants of river terraces formed prior to the excavation of the gorge, but merely detritus brought down by sprouts during the rains, and that the implements were fashioned from stones found on the old valley floor after the gorge was carved out. This explanation is certainly the more feasible, for while rejecting an unparalleled antiquity for the class of implement it does not preclude a reasonable antiquity for the examples found.

\* Nature, LXXIII., 77 (1905).

† Quarterly Journal of the Geological Society of London, LXV., 390-407 (1909). The student should also consult Mr. Lamplugh's paper in Journ. Ant. Inst., XXXVI., 159 169 (1907).

Again, the implements may not all be of the same age. Mr. Balfour, in describing\* an amygdalith of Chelléan form, says: "We have here an example of an implement taken from an ancient river deposit of the Zambesi, of which the patination and abraded surface point to a considerable antiquity, and the form and manufacture is pre-eminently characteristic of the (Acheulic) river-drift period of Western Europe." A statement which is fully borne out by the beautiful illustration which accompanies the note. On the other hand, "some were almost as sharp as they were when freshly made." Among specimens shown to the writer by Mr. Zealley was a lump of chert, partly chipped into an amygdalith, which had every appearance of having been worked on the spot.

#### STELLENBOSCH AND DRAKENSTEIN VALLEYS.

One of the earliest discoveries of Acheulic amygdaliths in quantity was that by Dr. Péringuey in the taluses of the Stellenbosch and Drakenstein Valleys. The occurrence is described and illustrated in the monograph already quoted. They are fashioned out of small boulders of quartzite, and occur in all stages of manufacture from the stone with only one or two chips knocked off to the finished implement. The pointed form with the butt end unworked would appear to be predominant, though the type with the edge continued all round is well represented. The general facies would therefore appear to approach the Chelléen, whereas, with the possible exception of the older series from Barkly, the assemblages noticed in the succeeding paragraphs are either distinctly Acheuléen or the even more advanced group from Barkly, Vereeniging, and Luckhoff. With the amygdaliths are associated quantities of the characteristic large flakes produced in the preliminary reduction in size of the larger boulders.

#### THE KRUGERSDORP AND BEZUIDENHOUT VALLEYS.

The slopes of the Witwaters Rand are clothed with a deposit of red, sandy loam and stones, resulting from the disintegration of the rocks of which they are composed. This talus yields quite sharp and fresh-looking Acheulic amygdaliths.

---

\* Journ. Ant. Inst., XXXVI., 170-171 (1907).

The Krugersdorp and Bezuidenhout Valleys are situated in the Witwaters Rand, and their slopes are covered with this deposit. My friend Mr. Jobling has a worn but well-shaped amygdalith from the talus on the side of the Krugersdorp Valley, while I have a quite sharp but much stained example from that on the side of the Bezuidenhout Valley.

The valley bottoms are occupied by fluvialite deposits, and the present streams alternately flow over and cut deep into them. The sections thus exposed show coarse sediments, consisting of small boulders of quartzite and subangular pieces of quartz, overlain by dark-coloured loam, and in places by peat. The older deposit is probably contemporary with, and the newer deposit is probably more recent than, the implement-bearing talus.

From the stratum of coarse detritus I have obtained a number of Acheulic amygdaliths and a quantity of characteristic large flakes of quartzite, chert, quartz, and green aphanite. Most of the amygdaliths were found in the beds of the streams, but are clearly derived from the stratum of coarse detritus. They are all more or less waterworn.

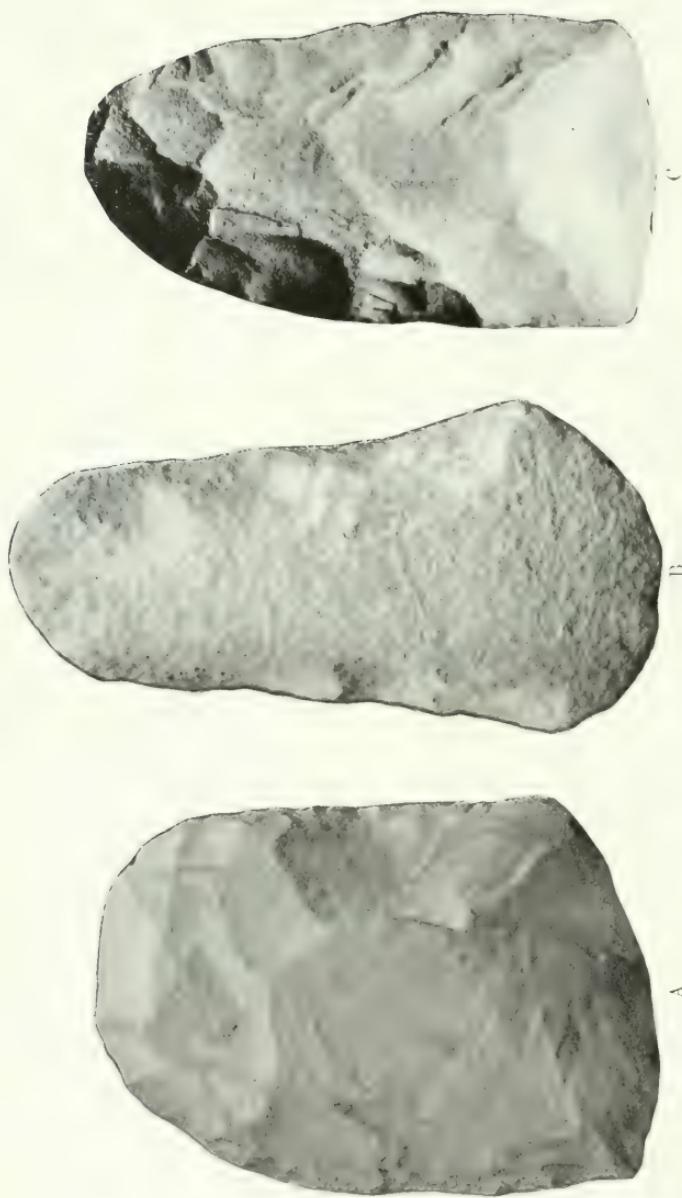
From the Krugersdorp Valley an amygdalith of white quartz is noteworthy, as also is an exceptionally thin and symmetrical quartzite example. More interesting still is a fine example of the broad variety of celt in quartzite from the same locality. From the Bezuidenhout Valley a very neat, but much waterworn, amygdalith in blue chert found in position in the deposit at a depth of about two metres is also worthy of special mention. The rest of the amygdaliths are all of quartzite.

These implements must once have been scattered over the slopes of the Witwaters Rand, and, subsequently, washed down together with other coarse debris into the bottom of the valleys during a period of heavy rainfall. Afterwards, more tranquil conditions prevailed, during which the stream channels became silted up; these being in turn succeeded by the erosive activity of the present epoch.

#### THE STEYNSDORP AND EMBABAAN VALLEYS.

The slopes and upper end of the Steyndorp Valley are clothed with a talus consisting of large sub-angular pieces of the different





*PLATE II.—ACHEULIC CELTS.*

(A) ACHETEEN FORM FROM ROBINSON, (B & C) LUCKHOFFIAN FORMS FROM LUCKHOFF AND VEREENIGING,  
THE FIRST AND LAST FROM MESSRS. LOXTON'S AND LESLIE'S COLLECTIONS, SCALE ABOUT  $\frac{1}{2}$ .

local rocks embedded in a reddish-brown loam. In the middle of the valley this loam has been removed, and the concentrated stones have been rolled and worn by a former stream. This gravelly detritus is now buried under a later accumulation of loam. The present stream has cut its way down through the loam, and in places through the underlying detritus also.

Acheulic amygdaliths and celts occur both in the talus and in the old stream deposit. In the former they are often quite sharp and fresh-looking, but in the latter they are always waterworn.

The talus on the higher portions of the slopes is being slowly but continuously washed to a lower level by the rain, so that here and there an Acheulic amygdalith is exposed to view, looking as though it had been dropped on the present surface.

The present surface is strewn with small chert flakes of more recent date, among which I obtained a fine scraper of a form (Fig. 12, top row) that is very characteristic of the Solutre group. I have also a spheroidal perforated stone ball from there that was given me by my friend, Mr. Atkin, who found it associated (accidentally?) with a Bantu interment: a fine unpolished urn, with incised geometric decoration, the bottom of which had been knocked out, was also found with the skeleton.

Acheulic implements occur under similar conditions in the Embabaan Valley. Specimens were recorded\* from there in 1898 by Prof. Rupert Jones, who described thirteen examples found by Mr. Ryan. I also have a number of Acheulic amygdaliths and celts from the Embabaan Valley that were given me by my friend Mr. Nash. Together with them were a number of chert flakes trimmed to a point: most of these are worked on one side only, but two or three of them have been worked on both, including the fine specimen shown in Fig. 6. There can be little doubt, I think, that these are more recent than the Acheulic amygdaliths from the deposits.

#### ROBINSON.

The country between Krugersdorp and Randfontein is dotted with pans, most of which, unlike those of Western Orangia, but like those of the Lake Chrissie district, hold water all the year round.

\* *Journ. Ant. Ins.*, XXVIII., 48-54 (1898).

One of these, situated north of Robinson, has been drained, and a pit has been sunk in it for the supply of brickearth.

The section exposed shows bluish-black carbonaceous soil passing downwards, at a depth of about 2·5 metres, into tenacious yellowish-brown loam. At 1·5 metres from the surface there is a well-defined line of stones, and at 2·5 metres there is another but less persistent layer. Isolated stones occur to the depth at present reached, namely, 4 metres.

The pit is situated in the flat bottom of the pan, but towards the side.

A large number of Acheulic amygdaliths and celts, in different stages of manufacture, have been obtained from this pit, but the exact horizon from which they mostly come is uncertain. They were not noticed till the pit had nearly reached its present depth, which would seem to indicate that they chiefly came from low down in the section, but one of the foremen, on the other hand, thinks that they mostly came from the one-and-a-half metre horizon. I myself saw worked stones in situ at both the 1·5 metres and 2·5 metres level. The condition of the specimens shows that none have come from the surface.

The implements are mostly of quartzite—of both fine and coarse texture—several are of chert, while three are of white quartz.

There can be no doubt that they are close to the site of manufacture. Most of them are quite sharp and fresh, though a few show signs of wear, while one is much worn.

Two unusual features are the abundance of round hammer-stones and the rarity of the characteristic large flakes. These last, however, which are usually met with in abundance near sites of manufacture, were probably produced in the preliminary reduction in size of small boulders prior to their conversion into amygdaliths: in this case the implements were fashioned out of large pebbles that did not require reducing in size.

It seems certain that they originally rested on the sloping sides of the pan, where they were made, and, subsequently, drifted down on to the bottom where they were buried.

The succession of geological conditions indicated is in accordance with that which obtained in the Krugersdorp and Bezuidenhout Valleys.

## BARKLY.

At Barkly, on the Vaal River, between the bridge and the village, there is a terrace in which numerous pits have been sunk by diggers in search of diamonds. It lies at the foot of a ridge of hills, hence the talus element is predominant, though the river gravel is in evidence throughout. The deposit consists chiefly of small boulders and large irregular stones, in which, however, every edge and corner has been well rounded. The most remarkable feature of the bed is the extraordinary abundance in it of Acheulic amygdaliths and the associated characteristic large flakes; these frequently occur on the top of the heaps of excavated stones, and, hence, come from the bottom of the pits, a depth of about ten metres. Now, out of the numbers of implements exposed in the heaps of stones, all but a very few are equally rolled, being almost reduced to pebbles. The rolled implements present a Chelléen facies, but the few sharp implements, on the other hand, are much more advanced both in form and finish, resembling the assemblage described below from Vereeniging. I have come to the conclusion that there are two distinct series; the one probably older than and the other contemporary with or newer than the deposit. Prof. Beck has recorded the discovery of a molar of the mastodon in the corresponding terrace on the other side of the river.

## VEREENIGING.

A large number of Acheulic implements have been found by my friend Mr. Leslie at a site of manufacture situated on the bank of the Vaal River, west of the village of Vereeniging. There the river has cut a channel deep in the solid rock, and on top of the cliff thus formed is an old terrace consisting of gravel and small boulders overlain by loam. This for several hundreds of metres has been furrowed and spread out by the rain. There unfinished amygdaliths occur in great abundance, and the flakes produced in their manufacture are to be found by the thousand, while here and there completed specimens were met with.

Examples of both extremes of form of the finished amygdaliths are to be noted among the Vereeniging specimens, but, as usual, the great majority are of intermediate shape. An interesting feature,

noticed also at Barkly, is the distinct foreshadowing of the typical Solutric form by some aberrant members of this group. Celts are well represented. One example found by myself is so neatly and symmetrically shaped that, but for the evidence of the others, it would certainly be taken for a Neolithic axe-head, the fact that the edge was obtained by chipping instead of by grinding being obscured by the slight amount of weathering it has undergone. The class of implement consisting of a big flake worked on one face only, is also abundantly represented. I obtained in addition two or three smaller flake-tools.

The quartzite seems to have been of too coarse a grain, as a rule, for satisfactory working, as nearly all the failures and very few finished implements are in that material, the majority of the good specimens being of a green aphanite. Many of these last are as sharp and fresh as on the day they were made, and the obliteration of the sharpness of the facets in the others is entirely due to weathering following exposure. One or two unfinished examples of chert were also found.

It is uncertain whether the implements are contemporary with or more recent than the gravel bed, but they are, undoubtedly, older than the overlying loam.

#### LUCKHOFF.

There is an Acheulic site close by the village of Luckhoff of special interest. The implements occur on the solid rock underlying the sheet of reddish wind-borne sand which covers the surrounding flat country.

They were exposed in the gullies and on the slopes leading down to the dam, where the covering of sand had been removed by the rain, and were associated with numerous flakes and chips, which were probably produced in their manufacture. They include both amygdaliths and celts.

The amygdaliths were by far the more abundant and are much worn and deeply weathered, the facets being nearly obliterated; they are of lydian-stone, which has changed externally from its original black colour to a reddish-brown. This lydian-stone much resembles flint in its appearance and fracture when fresh, but is softer and

weathers much more rapidly. The celts, of which there are only seven, are of the local fine-grained gabbrodiortite, and are also much weathered and worn; they are larger than the amygdaliths, which accounts for the material used, because, while less easy to work owing to its toughness and uneven fracture, it is readily obtained in larger pieces than is the lydian-stone.

The great interest of this occurrence lies in the fact that these Acheulic implements occur in exactly the same position as the implements from the Solutric sites near Boshof, that is, they are both mingled with debris accumulated—in the former case naturally, and in the latter artificially—on the solid rock underlying the sheet of reddish wind-borne sand. Yet although manufactured of the same lydian-stone the implements of the one group are much worn and deeply weathered, whereas those of the other group are as sharp as on the day they were made, and have barely suffered a change of tint.

---

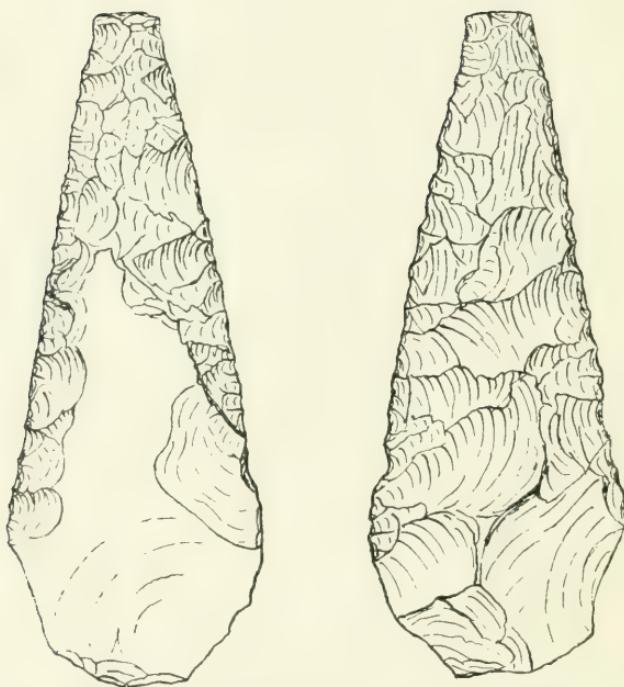


FIG. 6.—SOLUTRIC POINT FROM THE EMBABAAN  
VALLEY. (*Actual size*)

## CHAPTER IV.

### SOLUTRIC IMPLEMENTS.

In this chapter I shall draw attention to two South African occurrences of Solutric stone implements which, combined, exhibit the complete facies of the West European Solutric assemblage.

#### CAPE FLATS.

The advanced Acheulic amygdalith from Barkly figured in Plate I. well illustrates the form of the typical Solutric amygdalith, though it is infinitely clumsier, and is entirely lacking in the delicate finish that characterises the latter. Had the makers, however, possessed, instead of the refractory greenstone, a more amenable material, such as flint, it is a moot point whether they would not have produced equal results.

The Cape Flats, near Capetown, are the only locality in South Africa that has yielded a series of Solutric amygdaliths comparable in point of workmanship to those of West Europe, though several isolated specimens are known from other parts.

These were found by Dr. Dale in the neighbourhood of Salt River, and were described by him in an illustrated article in the Cape Monthly Magazine in 1870: a number of the specimens are preserved in the Capetown Museum.

Besides the amygdaliths, the Cape Flats yield small scrapers and minute trimmed flakes that are probably contemporary, as well as perforated stone balls, fragments of a plain hand-made pottery, and ostrich eggshell beads, in all stages of manufacture.

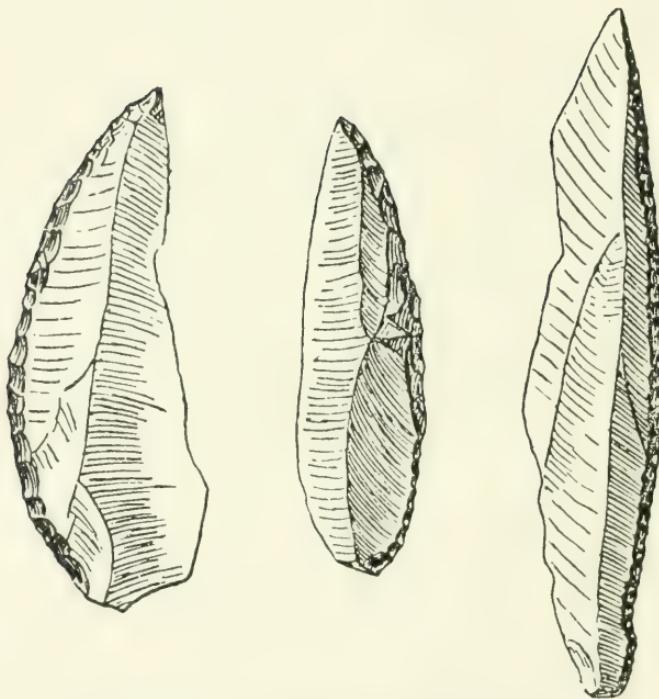


FIG. 7.—SOLUTRIC (AURIGNACIEN) FLAKE-TOOLS, FROM WEST EUROPE. After Prof. Breuil. (*Actual size.*)

## RIVERTON.

Riverton Island, near Kimberley, is famous for the outlines of animals and the curious symbols that are pecked on its polished rock-surfaces. The large representation of an eland mentioned by Mr. Stow is still in existence, though sadly damaged.

Above the alluvium and gravel on the south side of the river is a thin covering of constantly shifting sand. In places where this had been blown away I came across, in great abundance, a most interesting assemblage of implements. Apart from hammer and grind-stones, a perforated stone ball, and grooved cylindrical pieces of sandstone, they may be divided into three series: (a) Scrapers of lydian-stone and green aphanite, resembling in a general way those shown in Fig. 10, from the junction of the Reit and Modder Rivers;

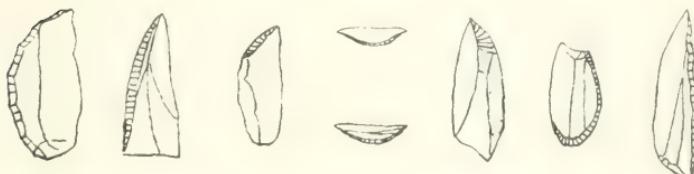


FIG. 8. "PIGMY IMPLEMENTS" FROM THE SOLUTRIC SITE  
AT RIVERTON. (*Actual size.*)

(b) minute chert scrapers like those illustrated in Fig. 11, from the Taabisch Spruit; and (c) pigmy chert implements of remarkably delicate workmanship, mostly of peculiar form and unknown use.

A series of these last are shown in the accompanying illustration (Fig. 8). They comprise six distinct types, including the long-lived crescent\*, besides little borers that may very well have been employed in the manufacture of the ostrich eggshell beads. The smallest crescent measures only 9 millimetres in length.

Among the Riet and Modder group the short variety of the wedge-shaped scraper is well represented. Many of the scrapers of the Taabisch group are much smaller than those from the type

\* Which in Europe survived through the Neolithic and succeeding Encolithic periods right into the Bronze age.

locality, though remarkably neatly finished. Equally small circular scrapers made from the half of a pebble occurred in great quantity.

Besides these I obtained fragments of a plain hand-made pottery and a number of ostrich eggshell beads, as well as spherical and cylindrical glass beads. These last, though much discoloured by long exposure to the weather, probably have no connection with the implements, there being all sorts of other modern debris associated with them in places. At the present time there are a number of Bantu living in huts on part of the old site.

An idea of the extent of the industry that once flourished on this Solutric site may be gathered from the statement that, from the comparatively small area then exposed to sight, I obtained over thirteen hundred flakes, cores, unfinished and rejected implements, as well as seven hundred neatly finished scrapers.

The assemblage is very similar to that described by Dr. Schweinfurth, from Sicily, in the *Zeitschrift für Ethnologie* of 1907.

## CHAPTER V.

## ACHEULIC AND SOLUTRIC GROUPS.

IN this chapter I shall describe some occurrences in which Acheulic and Solutric implements are associated, and in which their relative age is clearly shown.

## RIET AND MODDER RIVERS.

The junction of the Riet and Modder Rivers has been rendered classical by Mr. Rickard's account\* of his discovery of Acheulic implements there. Like all the large spruits in central South Africa, these are bordered by a narrow strip of alluvium overlying a stratum of coarse detritus.

"The implements from the Junction were found in the bed of the river immediately below the point where the rivers become confluent, lying either on the bare rock or in small hollows containing a little coarse gravel: I collected upwards of eighty specimens in a few hours, but had to abandon the majority of them on account of the difficulty and cost of transport."

He devotes two plates to them. Plate I. shows two typical amygdaliths. Plate II. shows a fine celt drawn to actual size.

I myself obtained quite a number of both types there, but they were all very much waterworn, being almost reduced to pebbles. I have no doubt that they come from the gravelly stratum at the base of the alluvium. This was east of the bridge.

West of the bridge, and some little distance north of the river, I found a great quantity of quite sharp and fresh scrapers of lydian

\* Cambridge Ant. Society, V., 57-66 (1880).

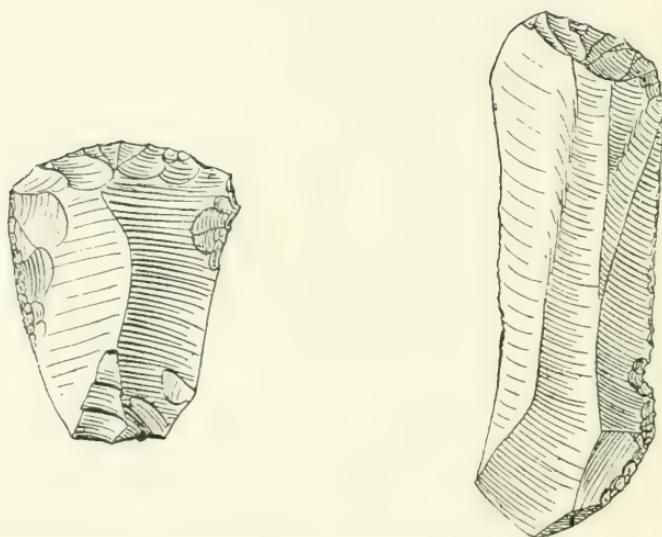


FIG. 9.—SOLUTRIC (AURIGNACIEN) SCRAPERS, FROM WEST EUROPE. After Prof. Breuil. (*Actual size.*)

stone, mixed with flakes and cores. They had been exposed to view by the removal of a thin covering of surface soil. They exhibit a remarkably wide range of variation, only the commoner forms being shown in Fig. 10. Interesting are extremely elongate forms and a variety trimmed at both ends. The assemblage bears a close resemblance to certain of the Solutric groups of Europe. These implements are unquestionably newer than the alluvium.

Together with them I found three or four chert scrapers, a multiple-grooved cylindrical piece of sandstone, a hemispherical stone with a hole bored to a depth of about one-and-a-half centimetres from the flat side, numerous ostrich-eggshell fragments, a

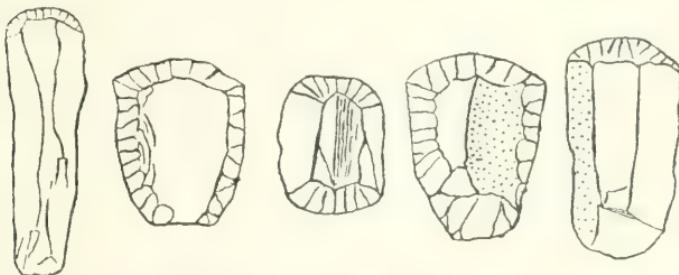


FIG. 10. SOLUTRIC SCRAPERS OF LYDIAN-STONE FROM THE JUNCTION OF THE RIET AND MODDER RIVERS. (*Actual size.*)

bead made of same, and the half of a glass bead. This last, probably, has no connection with the other objects.

The discovery by Mr. Bain of the remains of an extinct buffalo in the alluvium of the Modder River is interesting in this connection.

#### TAABOSCH SPRUIT.

The Taabosch Spruit is a tributary of the Vaal, and flows into that river south-west of Vereeniging. Mrs. Hutt had previously obtained Acheulic implements there, and drew my attention to the fact.

My more important finds comprise a group of Acheulic implements from beneath, and a group of Solutric implements from above, the alluvium.

From the bed of coarse detritus, at the base of the alluvium, I have obtained, in addition to a quantity of the characteristic large flakes, a number of Acheulic amygdaloliths. They are fashioned out of a green aphanite, and are all waterworn, some being reduced to the condition of a pebble. I also obtained specimens of the group of large flakes worked on one face only.

In places on top of the overlying alluvium I came across quantities of very small flakes of chert, jasper and agate, and here and there among them examples that had been trimmed into minute scrapers. Some of them are shown in Fig. 11. It is difficult to imagine exactly what could have come within the scope of these remarkably small tools. The fineness of the secondary trimming is really wonderful.



FIG. 11. SOLUTRIC SCRAPERS OF CHERT FROM THE TAAIBOSCH SPRUIT. (*Actual size.*)

They are of the same class as, and contemporary with, those from the junction of the Riet and Modder Rivers. Though the difference in facies is so very marked it is entirely due to the difference in the materials of which they are made. At some localities the only available material was the lydian-stone, and at others the three varieties of flint. Now, the lydian-stone occurs in comparatively large pieces and permits of the manufacture of comparatively large scrapers while at the same time affording scope for the wide range of variation exhibited. The chert, jasper and agate, on the other hand, occur only as small pebbles, and, therefore, only small scrapers could be made from them, while variation was correspondingly restricted.

#### PRIESKA.

The Orange River, on the north bank opposite the village of Prieska, is bounded by a terrace of sub-angular jasper gravel. This gravel is cemented into a hard conglomerate by sand and lime. It

is overlaid by sandstone, consisting of quartz grains similarly bound together by calcareous matter. I saw many much worn characteristic large Acheulic flakes, as well as an amygdalith, *in situ*, in the gravel, but was unable to extract them owing to its hardness. I, however, obtained one very nice, though worn, specimen that had only just been freed by atmospheric disintegration of the matrix. There are many similar jasper amygdaliths, as well as some of quartzite, in the bed of the river, that are evidently derived from this deposit, and of which I brought away some examples.

Among sand-dunes overlying this terrace I obtained conclusive evidence of the presence of the Solutric group in the shape of a characteristically small jasper core, coloured chert flake, and grey chert scraper, like those from the Taaibosch spruit. I also found a hemispherical stone like that from the junction of the Riet and Modder Rivers, but with the hole barely started.

\* \* \* \* \*

The above evidence at first seems to definitely decide the relationship of the Acheulic and Solutric groups, but one must not overlook the possibility that it does not reflect the whole truth.

Those who believe that the Acheulic and Solutric implements were made by one and the same people will point out that it only proves that some Acheulic implements are older than some Solutric ones, and that there may very well have been, on the one hand, Solutric scrapers contemporary with the early Acheulic amygdaliths, and, on the other hand, Acheulic amygdaliths contemporary with the late Solutric scrapers. They will also explain the frequent occurrence of Acheulic implements in ancient deposits and the restriction of the Solutric implements to quite recent sites, by the theory that of the earliest implements only the large amygdaliths have survived denudation, and that only the more recent of the sites have escaped.

Against this view is the persistent separateness\* of the Acheulic and Solutric groups. But this may be explained by supposing that all occurrences of Acheulic amygdaliths in quantity are on sites of

\* Dr. Péringuey testifies to this separateness in the monograph already quoted, though he somewhat obscures the fact by the frequent reference to untrimmed flakes as scrapers. A careful comparison of text and figures, however, dissipates this obscurity.

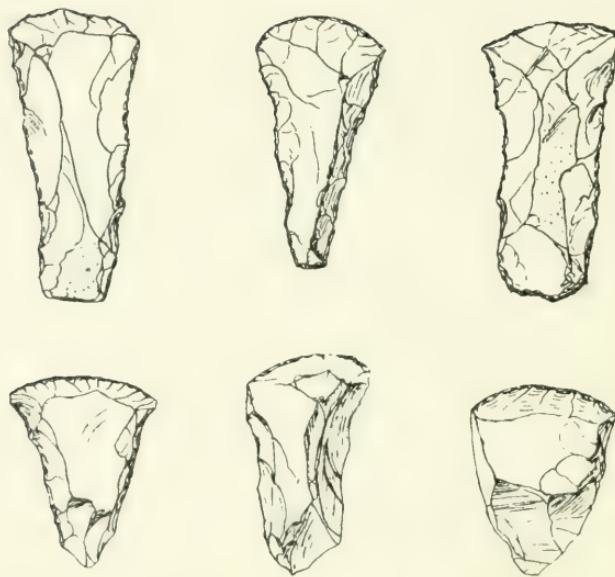


FIG. 12. SCRAPERS FROM SOLUTRIC SITES IN ORANGIA.  
(*Actual size.*)

manufacture, which is not at all improbable, whereas all occurrences of Solutric scrapers in quantity are on sites of habitation, which is certainly the case. The former may have been used for work outside the confines of the settlement, and may have been specially prized, whereas the scrapers are domestic implements of little value. Hence the absence of the one and the abundance of the other on Solutric sites.

For the present, however, it is safer to be guided entirely by the facts, though the fragmentary character of the archæological record fully justifies independent speculation.

## CHAPTER VI.

## SOLUTRIC SITES.

One may safely assume that Solutric sites are scattered throughout the length and breadth of South Africa. The wide distribution of the known sites, which stretch from Bulawayo to Cradock, fully justifies the assumption.

## ORANGIA.\*

The country between the Vaal and the Orange Rivers is probably very prolific in Solutric sites. I have already described the occurrence at the junction of the Riet and Modder Rivers and that at the Taaibosch Spruit, also the site at Riverton, where the two facies of implements are combined.

I have described elsewhere a number of sites near Boshof, also one at Petrusburg and another at Rietpan, between Boshof and Bloemfontein, while my friend Mr. Taylor has discovered sites in the neighbourhood of Bloemfontein.

The implements from these sites are nearly all scrapers of lydian-stone like those from the junction of the Riet and Modder Rivers. It is impossible to adequately describe and illustrate them. So multitudinous are the varieties, so remarkable the identity of specimen after specimen from different sites, so similar is the general assemblage and yet so distinct the local facies, that one requires to see the specimens in order to obtain a true idea of them. It is noteworthy that nearly all the forms figured by Prof. Breuil in *Comptes*

---

\* The sites in the country between the Vaal and the Orange rivers are described in detail in my *Geological and Archaeological Notes on Orangia*, and are only referred to in a general way here.

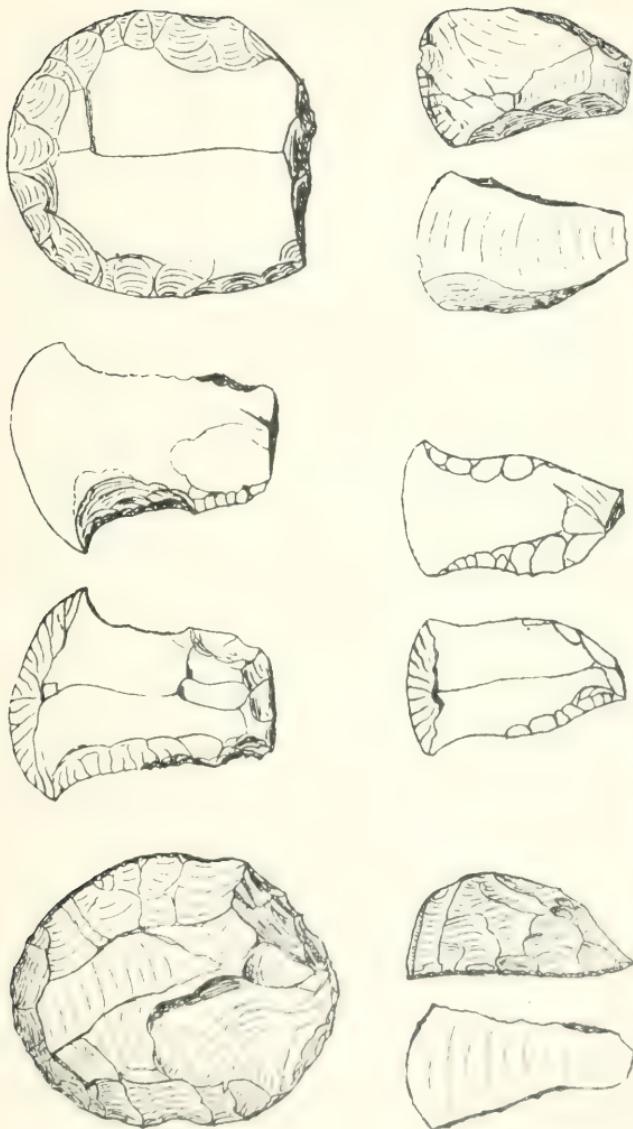


FIG. 13.—SCRAPERS FROM SOLISTIC SITES IN ORANGIA. (*Actual size.*)

Rendus du XIII<sup>e</sup>. Congrès d'Anthropologie et d'Archéologie Préhistoriques, as characteristic of the Aurignacien, are abundantly represented. At some sites very thick scrapers are prominent, while at others thin scrapers predominate.

In addition to the scrapers these sites have yielded some "pigmy implements," hammer and grind-stones, small tabular pieces of aphanite with a groove worked in the one side, multiple-grooved cylindrical pieces of sandstone, portion of a stone ring and perforated stone balls.

Two large perforated stone balls from Vooruitzicht and a small one from Meerlandsvlei, given me by Mr. Jones, well illustrate

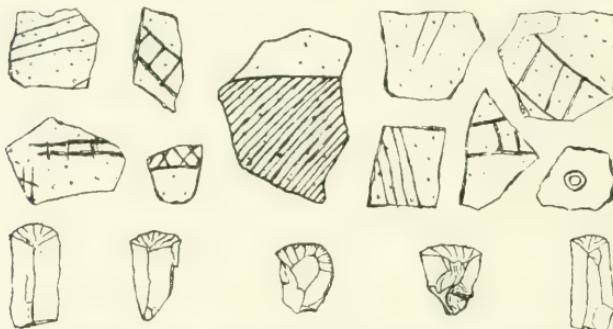


FIG. 14. INCISED FRAGMENTS OF OSTRICH EGG-SHELL AND MINUTE SCRAPERS FROM SITES IN ORANGIA. (*Actual size.*)

the diversity in size of these objects. The largest specimen measures 10 centimetres along the perforation and weighs about 2 kilogrammes, while the smallest is only 4 centimetres in diameter with a weight of about 0.1 of a kilogramme. The latter is not completed, the hole which has been started from both sides not being finished. At Devilliersrust I obtained a perforated stone that differs in many respects from the ordinary. Whereas these are either spherical or spheroidal in shape, this one is discoidal. The hole has been bored from both sides, and instead of being of uniform size, gradually decreases in diameter till at the middle it has only half the diameter it possesses at the two ends. Further, the striae in the

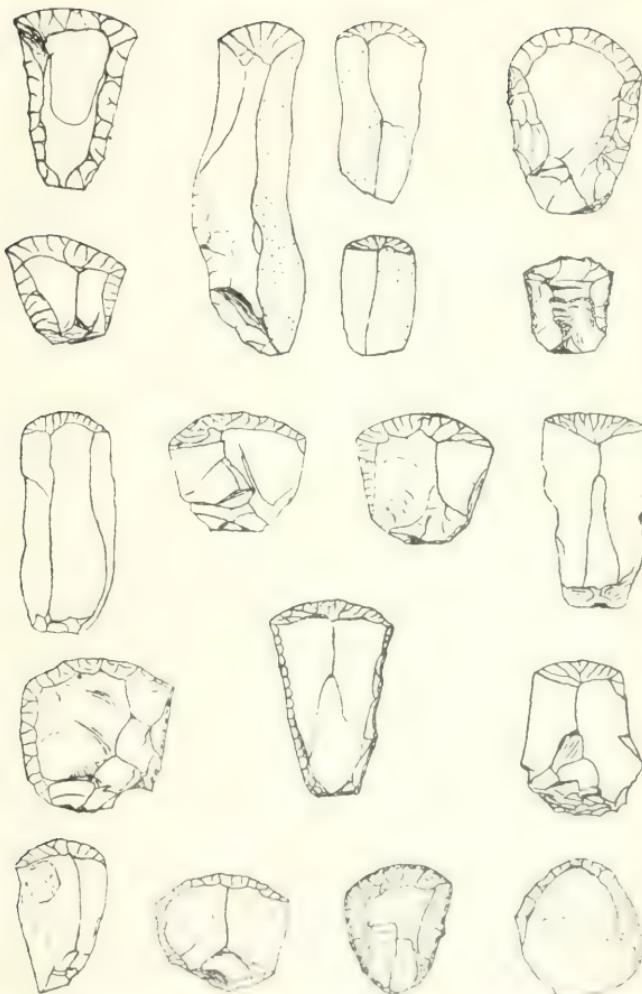


FIG. 15. SCRAPERS FROM SOLUTRIC SITES IN ORANGIA  
(Actual size)

hole are annular, not longitudinal, showing that the motion of the implement when in use was rotary instead of reciprocal.

At one of the sites I found a neat little lanceolate amygdalith (*feuille de saule*) of typical Solutric form, worked on both sides.

In addition to the implements these sites have yielded beads made of ostrich eggshell, bone pins (portions of arrows), and incised fragments of ostrich eggshells that were probably used as water-receptacles. Fragments of a plain hand-made pottery are abundant, while I obtained one decorated piece, the decoration, which is not complete, consisting of four rows of cord pattern.

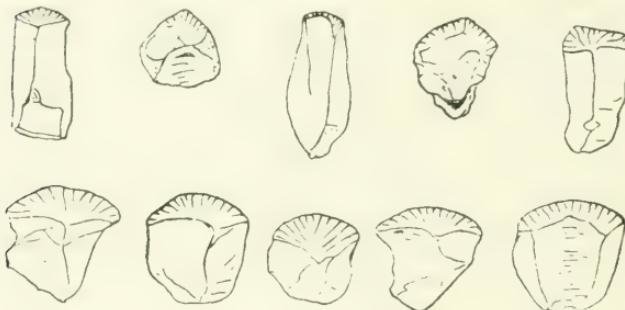


FIG. 16.—SCRAPERS OF APHANITE, CHERT, AND QUARTZ FROM SOLUTRIC SITES ON THE WITWATERS RAND. (*Actual size.*)

I found a few scrapers of lydian stone associated with the petroglyphs at Koflyfontein, Biesjesfontein and Baviaanskranz, and at the last-mentioned place numerous very small chert, agate and jasper flakes, one or two of which had been trimmed into scrapers, in addition.

I have described elsewhere the occurrence of minute scrapers of chert, agate and jasper, like those of the Taalbosch Spruit, in rock-shelters, containing paintings at Ladybrand, Modderpoort, and Ficksburg, and near Fouriesburg. At Modderpoort I also obtained a bone pin (portion of arrow) like those from the sites near Boshof (Fig. 22).

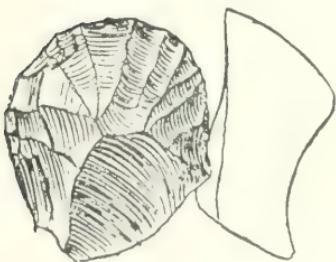
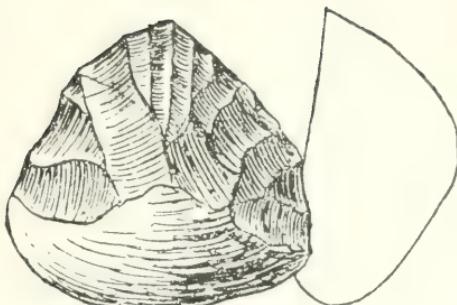


FIG. 17. SOLUTREAN (AURIGNACIEN) SCRAPERS, FROM WEST EUROPE. After Prof. Breuil. (*Actual size*.)

## WITWATERS RAND.

I have a number of Solutric scrapers from three widely separated localities on the Witwaters Rand.

The implements from the farms Vlakfontein and Elandsfontein and the conditions under which they occur, are so similar that they may be conveniently described together.

The majority of these implements are minute scrapers similar to those from Taaibosch Spruit. They are, however, manufactured from different materials. Most of them are of white quartz, and bear eloquent testimony to the skill of the makers, for it is one of the most refractory stones for the purpose. Many are of chert and some of a green aphanite. A series of these are shown in Fig. 16. It will be noticed that although in every case the bevelled edge has been so carefully and symmetrically worked, no attempt has been made to trim the reverse end to any definite shape; from which one may infer that they were either bound or cemented to a handle. Larger and smaller specimens, as well as concave scrapers, occur.

Associated with the scrapers are quantities of green aphanite flakes of more ordinary size; from both localities I have specimens of the cores from which they were struck. I think they were made purely for use as flake-tools.

At both places the implements were found on the surface among low kopjes bordering spruits.

The implements from the farm Waterval are a similar assemblage to the above. They are made of the same materials, and are associated with similar green aphanite flakes. Together with them I found numerous, and mostly quite sharp, flakes of quartzite, together with two rough discs of the same material.

I have also in my collection a portion of a perforated stone found by Mr. Hewitt, on Signal Hill; it appears to have been of the discoidal type.

## BLOEMBOSCH.

Dr. Péringuey has described in the monograph already quoted what appears to be a Solutric site on the farm Bloembosch, situated about 40 kilometres from Darling.

The remains were found on the surface at the side of a spring, where they had been exposed by the removal of part of a sand dune. The artefacts comprise small cores, scrapers (?)\*, minute trimmed flakes, broken perforated stone balls, a grooved stone and ostrich eggshell beads.

With these, and according to Dr. Péringuey, contemporary with the implements, were bones of the big extinct buffalo, and of a large extinct species of horse, as well as of various of the existing large mammals.

#### OTHER SITES IN THE OPEN.

At a spot about three kilometres south of the village of Cradock, a large number of lydian-stone scrapers have been found by Mr. Cottell; they are a very representative series and comprise most of the common varieties. With them he found, and kindly gave to me, the two arrow-heads shown in Fig. 23.

On Blinklip, near Wolmaransstad, I found numbers of very small chert and agate flakes and three minute scrapers associated with petroglyphs.

On the outskirts of the village of Barberton there is a painting, depicting men shooting at an antelope, placed in a hollow in a rock. In the surface soil around this spot are numerous characteristic small chert flakes, and the typical minute scrapers certainly occur there though I did not find any. From the same neighbourhood Mr. Hulley gave me two perforated stone balls; they are spherical and spheroidal in form and weigh 5·7 kilogrammes and 4 kilogrammes respectively, but differ from those from near the village of Boshof, in that the holes are biconical.

South-east of Bulawayo are some koppies where I came across quantities of very small flakes of coloured chert, some of which had been trimmed into minute scrapers, also a very fine example (Fig. 19) of the crescent form of "pigmy implement."† It is noteworthy

\* Scrapers are mentioned, but the specimens figured as such are merely flakes.

† See also Mr. Gardner's account of stone implements from the Bulawayo commonage in Proc. Rhodesia Scientific Assoc., VII.

that Mr. Hall has since discovered a number of paintings among the kopjes.\*

On the right bank of the Hart River, at its junction with the Vaal, I obtained a large number of minute scrapers, mostly of coloured chert, some very nice "pigmy implements," several ostrich eggshell beads, a circular stone with flat sides and edge, a cylindrical glass bead and some pieces of pottery. Especially interesting is the very neat little borer shown in Fig. 20, it will be noticed that the trimming of the one side is in the reverse direction to that of the other, so that when revolved both edges come into play.

At Blauwbank, situated on the banks of the Orange, near Prieska, I obtained a nice series of minute chert scrapers, as well

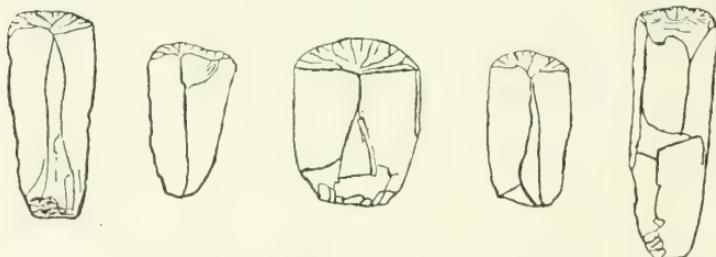


FIG. 18.—SOLUTRIC SCRAPERS FROM ROCK-SHELTERS IN THE ASBESTOS HILLS. (*Actual size.*)

as some neat "pigmy implements" from among sand-dunes; two of these (Fig. 20) are remarkable for their size and thickness. Together with them I found fragments of pottery, two small glass beads and numerous ostrich eggshell beads. These last occurred in every stage of manufacture, from a piece of shell with the hole just started, to the finished article; a series illustrating the process of making is shown in Fig. 20.

#### ASBESTOS HILLS.

The structure and constitution of the Asbestos Hills are very favourable to the formation of rock-shelters; they probably occur

\* Rock Paintings in the Bulawayo district have been figured by Mr. Zealley in P.R.S.A., X., 11-16 (1910).

throughout the whole range. Those examined by me are widely separated, one series being situated on Kranzfontein, and the other near Griquatown.

Quite sharp and fresh spalls of the local jasper were abundant in all the rock-shelters investigated. The majority of the implements are scrapers (Fig. 18) bearing a general resemblance to those previously described in this book, but the other small flake-tools (Fig. 21) characteristic of the Solntric stage of culture, including the "pigmy implements," are well represented. Ostrich eggshell beads and fragments of pottery also occur.

#### OTHER ROCK-SHELTER SITES.

In a ravine situated either on Doornkloof, or Kleinbuffelspruit, near the village of Carolina, there is a rock-shelter containing a number of paintings (*e.g.*, Figs. 34 and 35). Immediately opposite is another, but smaller, shelter in which there are no paintings. In front of this I obtained several of the characteristic minute quartz, chert, and aphanite scrapers. They were found at a spot where the rain had washed away the surface soil.

Near Rhodes' Grave, in the Matopo Hills, there is a rock-shelter with paintings from which Mr. Balfour showed me (in 1905) some characteristic scrapers.\*

---

\* A cave with Paintings in the Matopos has been described by Mr. Eyles in Proc. Rhodesia Sc. Assoc., III, 65-69, 1902 (1904), and Notes on Paintings and Stone Implements at the same locality have been published by Mr. Franklin White in P.R.S.A., V.

## CHAPTER VII.

### THE COAST MIDDENS.

ALL along the coast from Walvisch Bay on the west to Delagoa on the east, mingled with the sand dunes are extensive middens, the refuse of a people who were probably racially the same as the hunters whose sites are so widespread inland, but who gained their livelihood mainly by gathering molluscs and catching fish among the rocks.

These middens are largely made up of the shells of mussels, limpets, and other molluscs, and contain an abundance of fish remains and, in less quantity, bones of birds and small mammals. They all yield small stone flakes, like those found on the inland sites, but finished implements, such as scrapers, are not so common.

#### BLAUV BERG.

Dr. Péringuey records the finding of a skeleton in one such midden situated at Blaauw Berg, near Capetown. "Under this ridge of shells, some 18 or 20 inches in thickness, we obtained the skeleton of a female coated with a very thick deposit of carbonate of lime." Round the pelvis were two rows of ostrich eggshell beads. "The body was lying on its right side . . . ; the legs were bent and drawn towards the chin; the position of one arm was doubtful, but the encrusted right hand lay on the back of the pelvis."

The neighbourhood is prolific in midden debris which becomes exposed as the dunes shift to and fro: it includes perforated stone balls, which, however, seldom possess the usual regular spherical form, and hand made pots of a quite distinctive kind. These last are shaped like an ostrich egg-shell with a wide, short neck and two

lateral perforated projections (for purposes of suspension) at the one end.

Caves occur here and there along the coast, and often contain debris similar to that of the middens on the shore.

They appear to be particularly numerous in the cliffs to the south of the Outeniqua and Tzitzikama mountains.\* These "are filled with debris of shells, even up to a short distance from the roof; occasionally bat guano helps to complete. Intermingled with the debris, which is often of considerable depth, are found, either on the surface or in layers, stone and bone implements, as well as bones of fish, mammals, birds, ornaments made of shells, and skele-



FIG. 22. MIDDLE PORTION OF BUSHMAN ARROW AND SIMILAR TRUNCATED BONE PIN FROM A ROCK-SHELTER AT MODDER-POORT. (*Actual size.*)

tions so numerous that the question arises: Were not the caves and shelters used as necropoles rather than as habitations for the living? They may prove to have been both."

#### TOW RIVER.

Mr. Dumbleton has given a careful description of the result of a search for skeletons in one of these caves. "After digging for a short time a skull appeared at a depth of about two feet from the surface. I removed the layer of earth carefully, so as to discover the exact position of the skeleton. When this was done, I found that it was completely enveloped in a thick casing of dry seaweed, which was still in a perfect state of preservation. Inside this again was the hair of a bar-lambek skin, which had evidently been wrapped

\* Some notes on these caves have been published by Mr. K. G. C. de Jager, *Ant. Inst.*, XXX, 45-49 (1900), but I have not seen the paper. My information is derived from Dr. Pennington's monograph.

round the body. The skin itself had entirely rotted away, but the hair was still in a good state of preservation. After removing all this very carefully, the position of the body was made quite clear. It was lying on the left side with the knees and hands doubled up to near the chin. Having ascertained this, I proceeded to take up the bones. On coming to the head, I discovered immediately in front of the face two tortoise-shells, which, however, fell to pieces on being touched." Here also was a stone scraper joined to a wooden handle by a lenticular mass of gum. "On raising the skull I found that it was resting on a third tortoise-shell, which also fell to pieces."

The skeleton, which proved to be that of an adult male, and the implement, which has been figured by Dr. Péringuay, are preserved in the Capetown Museum.

Most of these cave deposits have been disturbed because the farmers in that part utilise the mixture of decomposed shells, wood ashes, and bat guano, as fertilisers for their lands.

#### COLDSTREAM CAVE.

From the examination of another of these caves—the Coldstream—very important results have recently been obtained, and these require a more extended notice.

The following is Mr. Henkel's description of the earlier excavations. "In order to ascertain the nature of the deposits, Mr. Witcher dug a trench about the middle of the cave, one foot wide, across the deposit. When a depth of about 18 inches was reached the skull of a human being was found. Mr. Witcher was much interested in this discovery, and decided to commence operations at the southern extremity, and carefully remove a section.

"The material, consisting of shells, ash, etc., appeared useful as manure, and with a view to utilising it a road and footpath were constructed. The material, covering a section of about nine square yards, was searched and removed, in most cases by him. The excavation was commenced in the southern part of the cave. When a depth of about two feet was reached human remains were discovered, more or less decayed, owing to dampness. The skeletons were complete, but the skulls were usually found to be broken. It

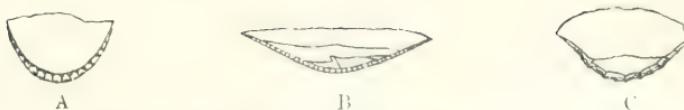


FIG. 19. VARIETIES OF THE CRESCENT FORM OF "PIGMY IMPLEMENT" FROM (A) RIVERTON, (B) BULAWAYO, AND (C) HART RIVER. (*Actual size.*)

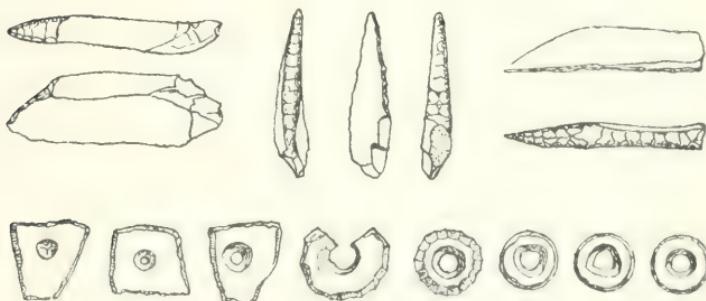


FIG. 20. OSTRICH EGG-SHELL BEADS AND TOOLS USED IN THEIR MANUFACTURE. (*Actual size.*)

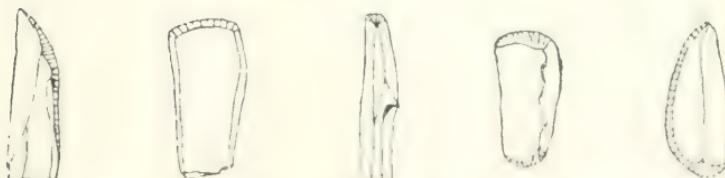


FIG. 21. SMALL SOLTUSTRIC FLAKE-TOOLS FROM ROCK SHELTERS IN THE ASBESTOS HILLS. (*Actual size.*)

was soon discovered that each skeleton had three or four flat stones placed directly over the remains. At about two feet six inches, the skeleton of what appeared to be a woman was discovered; next to it was the skeleton of a child approximately two or three years old. The skeleton of the child had two or three flat stones above it. It was lying on its right side. The left hand was lying across the neck. The legs were doubled up, the knees nearly touching the chin. The debris was carefully removed, and surrounding the wrists and ankles were pieces of perforated bone or ostrich eggshell. The 'beads' were strung on a cord, which, however, crumbled away as soon as touched. One hundred and forty-two 'beads' were collected, but this does not represent the total number, as some were lost. The beads are in a good state of preservation.

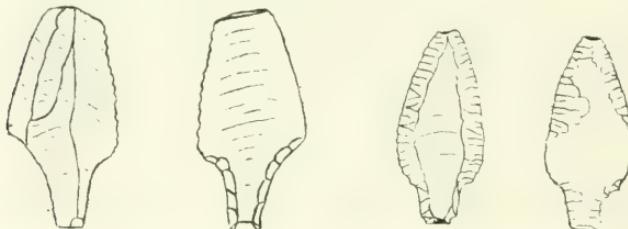


FIG. 23. SOUTHERN ARROW-HEADS FROM CRADOCK. (*Actual size.*)

"At the same elevation, and underneath a flat stone, in a cavity eight or nine inches deep, were discovered a number of shells averaging about one inch in diameter, each being perforated so as to admit of being threaded, apparently used as a wrist or waist ornament. No cord was found. Ninety-one shells in good preservation were found—about a dozen or fifteen had perished.

"Excavation was continued to a depth of about nine feet, and up to the time of my visit, in July, 1909, seventeen skeletons were discovered. In every case flat stones were found to cover the skeleton. These stones appear to have been placed directly upon the body, as shown by the evidence of the bones in some cases adhering to the stones, and other indications produced by decomposition of the flesh. In every case the skeletons were doubled up in a manner somewhat similar to that of the child already described.

All the skeletons discovered by Mr. Witcher were lying on the right side. His son, however, asserts that one skeleton he removed was lying on the left side.

" In the course of excavation three stones were found on which drawings were executed in black.

" On No. 1 are four drawings of human beings with prominent calves and buttocks.

" On No. 2 is to be seen the figure of a human being.

" No. 3 contained four drawings of animals. Unfortunately, these have disappeared, as it was left exposed to the weather.\*

" On the walls of the cave, which are discoloured by smoke, no drawings have hitherto been discovered. The drawings on the flat stones are made with charcoal.

" As already intimated, the debris in the cave was systematically removed in layers, bagged, and used as manure. The straight perpendicular wall of the northern face of the section shews clearly the method in which the debris accumulated.

" The latter consists principally of various species of shells, ash, and fragments of bone, both of animals and fish. Interspersed here and there are chips of stone, water-worn stones, and household tools, consisting of stone hammers, bone needles, etc.

" In order to verify the statement made by Mr. Witcher, I carefully examined the section of the cave exposed by the excavations up to July, 1909—the date of my visit. I found an excavation about nine yards square and a depth of nine feet. In my presence a further layer was removed, and a skeleton discovered. It had above it three flat stones. It was lying on its right side with knees drawn up to the chin. The arms were also bent. The skull was broken, probably owing to the weight of material above it. The skeleton appeared to be that of a full-grown man, and much decayed.

" In another part of the cave, about two feet below the present surface, the skeletons of two children were found. In these two cases only one flat stone was placed above the body. In one case, part of the skeleton was found adhering to the stone, showing clearly that the stone was placed directly above the body. The

\* Nos. 1 and 2 are figured by Dr. Péringuey in the monograph already quoted.

stones removed from the grave were carefully examined, but no indications of paintings were found on them.

"Up to the present over twenty skeletons have been discovered in the cave."

At this point systematic excavations were undertaken by Mr. Drury, of the Capetown Museum, and the publication of the results should add considerably to our knowledge.

---





PLATE III.—SOLUTRIC PETROGLYPHS.

(A) ELAND PECKED ON ROCK, VEREENIGING.

(B) ELAND SCRAPED ON ROCK, BIESJESFONTEIN.

## CHAPTER VIII.

### PETROGLYPHS AND ROCK-PAINTINGS.

SOLUTRIC petroglyphs and rock-paintings are distributed throughout the length and breadth of South Africa.

The former are mostly found on boulder-like outcrops of rock, either among koppies or in the open veld, while the latter are chiefly met with on rock-shelters. It would seem as if local conditions determined which were made. Smooth rocks, even though exposed to rain and wind, presented suitable surfaces for petroglyphs, but only overhanging cliffs that afforded protection from the weather were suitable for paintings.

The objects illustrated are mostly animals, and these, in the vast majority of cases, are irregularly distributed over the surface. This disconnected character of the figures is more prevalent with the petroglyphs, which seldom represent connected units, whereas the paintings frequently depict connected objects, such as the participants in a hunt or fight. The petroglyphs, too, are usually larger than the paintings, and seldom include the human form, whereas the latter frequently depict it. Many of the more advanced paintings constitute intelligible records of customs and myths. Both among the petroglyphs and paintings geometric figures or symbols are abundant at some occurrences, though entirely absent at others.

The petroglyphs are mostly peckings which range from crude outlines like those of Vereeniging to veritable bas-reliefs like those from near Klerksdorp. Lately the writer has discovered engravings associated with certain occurrences of peckings, and no doubt further research will show them to be more widespread.



FIG. 24.—TWO RHINOCEROSES FINELY AND COARSELY PECKED  
IN FULL, WOLMARANSSTAD. (Scale  $\frac{1}{3}$ ).

The most northerly petroglyphs that I know of are those at the Bumbusi ruins, in the valley of the Zambesi. Though almost certainly Solutric they differ from all others that have yet been found in that they consist of peckings of the footprints or "spoor" of game.\*

As very little has been published about the petroglyphs of South Africa I will give a brief description of some typical occurrences.

#### VEREENIGING.

The most primitive series of petroglyphs that I have yet seen are those in the neighbourhood of Vereeniging. They were discovered by Mr. Leslie, under whose guidance I subsequently visited them. There are several separate groups which, while apparently all of the same age, range in subject from the one in which animal figures only are represented, to the one in which geometric designs occur almost exclusively.

The former group is situated close by the occurrence of Acheulic implements previously described, but is probably of more recent date. It consists of a large number of outlines of animals pecked on a small outcrop of fine-grained sandstone. The animals represented are all wild species, such as the eland, giraffe, rhinoceros, and elephant.

The latter group is situated some distance north-west of the village. It consists of numerous geometric figures, which, however, do not seem to possess any symbolical character like many of those at other localities, and a few outlines of animals, pecked on another outcrop of the fine-grained sandstone.

The pecking is very irregular, more so, in fact, than in any others that I have seen, though the general effect produced is quite good.

All the groups appear to be of the same age, the petroglyphs being weathered to the same colour as the rest of the rock-surface and being of very uniform workmanship.

Characteristic Solutric scrapers of chert are of common occurrence on the surface in the neighbourhood of Vereeniging, and Mr. Leslie has two or three of the perforated stone balls from there also.

---

\* Photographs of these petroglyphs are reproduced by Mr. Kearney in his account of the Bumbusi ruins in *Proc. Rhodesia Sc. Assoc.*, VII.

## WOLMARANSSTAD.

A very fine series of petroglyphs, consisting of figures of animals pecked on smooth rock-surfaces, occur in the neighbourhood of this village. They are situated on the farms Blinkklip, Rooipoort, and Leuwfontein, the best series being on the last-mentioned.

At all these places they seem, from their varying degrees of preservation, to range over a considerable period of time. Some are nearly obliterated by the process of disintegration that all rocks are slowly but surely undergoing at the surface, while others seem almost as fresh as on the day they were made. Though the evidence of relative antiquity afforded by the degree of disintegration is not always trustworthy, owing to its effects being very unequal even in an apparently homogeneous rock, there is undoubtedly a great gap in time between those peckings that have been completely weathered to the same colour as the rest of the rock-surface and those that still retain most of their original freshness.

The figures are pecked both in full and in outline, the style and quality of the pecking exhibiting wide variations. I have endeavoured to indicate these features in the accompanying copies. Many of the more recent examples are battered rather than pecked on the rock. All the latest petroglyphs are of a distinctly inferior workmanship.

The figures of animals all represent wild species, and especially the large locally extinct kinds. At Blinkklip there are also one or two obscurely battered figures of men. In addition there are a couple of geometric figures, the one, at Blinkklip, consisting of three concentric circles with a dot in the centre, the other, at Rooipoort, consisting of several concentric circles.

In making the copies that are reproduced herewith, accuracy of outline was obtained by carefully tracing the boundaries of the pecked areas on transparent paper, while the shape, size and density of the pecks are imitated as closely as possible, their distribution, however, being less regular in the originals.

The pecking is usually very shallow, but in some of the outline figures it forms a comparatively deep groove. In some instances a grooved outline is combined with a shallow pecked body.



FIG. 25. ELAND SHOWN BY MEANS OF ELONGATED PIECES. WOLMARANSSTAD. (Scale  $\frac{1}{3}$ .)

The more recent and inferior peckings are probably all Bantu imitations of the earlier ones.

Together with the peckings at Leuwfontein, I came across the engraving of a zebra shown in Fig. 26. It probably represents the initial stage in the production of a pecking, and may be compared with the pecked zebra shown in Fig. 27. It has weathered to the same colour as the rest of the rock-surface.

At Blinkklip, among the boulder-like outcrops of rock, on which the figures of animals are pecked, I came across, in spots where the surface soil had been partly washed away by the rain, numbers of very small chert and agate flakes and three minute scrapers of Solutric type.

#### BIESJESFONTEIN.

The most numerous series of peckings that I have yet seen are at Biesjesfontein, some thirty kilometres south-west of the village of Koftyfontein. They are situated on the kopje adjoining the homestead.

As at Vereeniging and Wolmaransstad only wild animals are illustrated, but more species are represented, the eland, however, which was evidently a favourite, predominating here as there. Men are also represented, while geometric figures are abundant.

Besides these there are several representations in full of the eland that have been *scraped* instead of pecked on the rock.

Most interesting, however, are two engravings of which there are probably more examples. Tracings of them are reproduced in Fig. 27. The one is a large engraving in outline of a species of hippotragus, the other is a small engraving in detail of a quagga.

The former, like the zebra of Wolmaransstad, is probably the initial stage in the production of a pecking. The latter, on the other hand, was clearly never intended to be pecked over. The quagga is specially interesting, as it is one of those recently abundant animals that have become totally extinct through the agency of the European.

These petroglyphs are all in a more or less similar state of preservation, the worked portion of the rock being mostly weathered to nearly the same colour as the original surface. It is difficult to

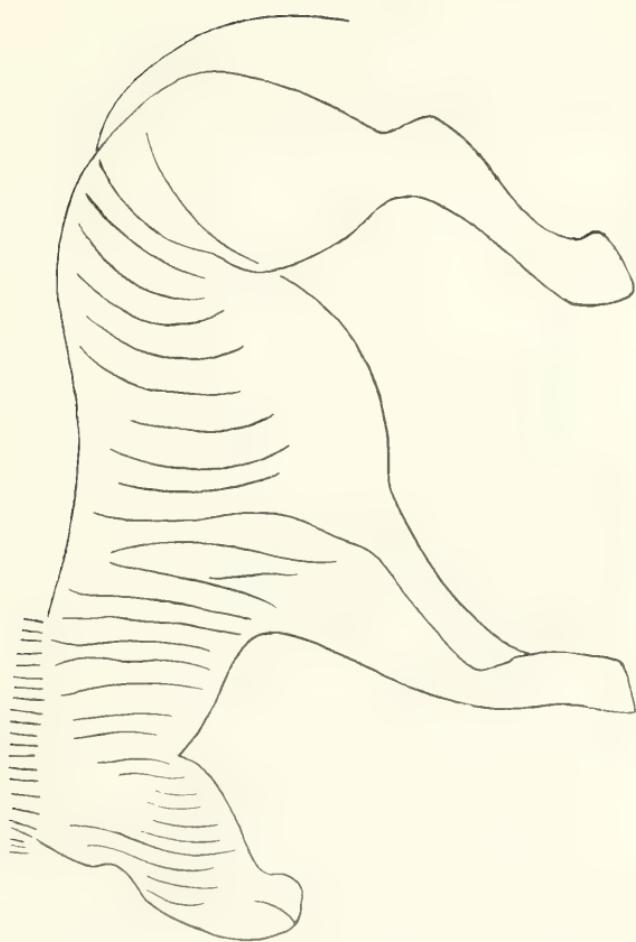


FIG. 26. ENGRAVING OF ZEBRA. WOLMARANSSTAD. (Actual size.)

decide whether the small range of variation in this respect is due to the unequal resistance to disintegration of the rock or to difference in age.

In addition there are three light engravings of animals, representing eland, gemsbok (?) and gnu, done in the same style as the quagga, but of markedly inferior workmanship, that are so fresh in appearance that they might very well have been made only yesterday. They are probably the work of Bantu. The farmer remembers them being there when he acquired the farm 47 years ago; this shows that the process of weathering on the class of rock (gab-

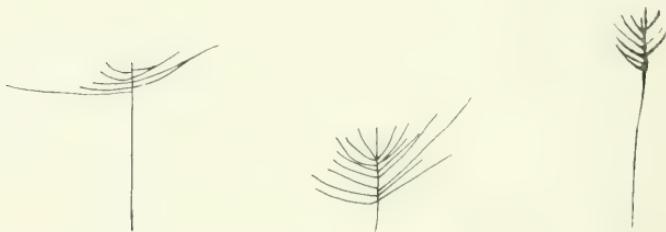


FIG. 28.—ENGRAVINGS OF ARROW-LIKE OBJECTS AT BLOEMFONTEIN, AND PAINTING OF SIMILAR OBJECT FROM THE NIAUX CAVE. (See *Messrs. Carthailac and Breuil, L'Anthropologie*, xix., 39, 1908.)

brodiorite) must be a very slow one, and that the earlier petroglyphs may be very old indeed.

Among the boulder-like outcrops of rock on which the figures are shown, I came across, in places where the soil had been washed away, some characteristic lydian-stone flakes and scrapers of the Solutric group.

#### BLOEMFONTEIN.

In the immediate neighbourhood of Bloemfontein a number of petroglyphs have been discovered by my friend Mr. Taylor, and I have had the opportunity of examining them under his guidance.





PLATE IV.—SOLUTRIC PETROGLYPHS.

ADVANCED EXAMPLES IN THE PRETORIA MUSEUM.

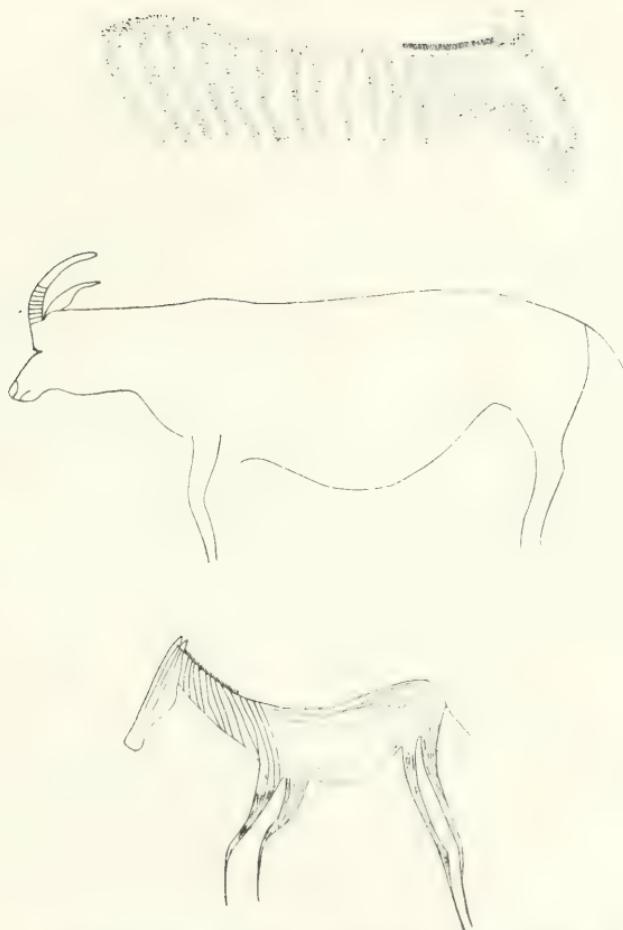


FIG. 27. REPRESENTATIONS OF ZEBRA, HIPPOTRAGUS, AND QUAGGA, PECKED AND ENGRAVED ON ROCK, BIESJESFONTEIN.  
(Scale  $\frac{1}{2}$ .)

They comprise a group of peckings and engravings on the northern outskirts of the town, and a few isolated examples.

Of the group of petroglyphs, the oldest peckings would appear to be some figures in outline of the eland that are already largely obliterated, the most recent are some figures in full of men that have quite a fresh appearance. On one rock an old pecking is partly covered by a new one—both represent an antelope of uncertain species. The engravings are poor, and apart from numerous lines and incomplete figures of animals include only two Solutric examples. These represent, respectively, an eland and an animal that might be a quagga or a giraffe, or even an okapi. A group of horses (Fig. 36) more lightly engraved, and evidently Bantu work, is interesting.

Of the isolated petroglyphs, an almost obliterated pecking, in outline, of an eland and a group of engravings are noteworthy. The latter include a number of more or less parallel lines of apparently no significance, one or two of which accidentally take the form of bows, and two arrow-like objects (Fig. 39), all of which are weathered to the same colour as the rock-surface; on the same rock is shown an eland and a gnu in characteristic Solutric style, but engraved over and added to by some European, who has also added a bow and three arrows in modern style.

#### BLAUWBOSCHDRIFT, NEAR DOUGLAS.

The very interesting series of peckings on the above farm were discovered by Prof. Young and myself in 1905. At that place the artists had selected a naturally polished surface on which to peck their pictures of man and beast. A reproduction of a photograph of the actual slab of stone on which they occur, and which has a special interest to the student of geology, as well as to the archaeologist, has been published elsewhere.\* The figures are confined to the upper half of the slab and number nearly two hundred.

A striking feature is the entire absence of representations of the large locally extinct mammals. Domestic forms predominate, the only wild species being the small ones that are still living in the

\* *Transactions of the Geological Society of South Africa* IX., Pl. XII. (1906).



FIG. 29.—BANTU PECKING OF TWO FANCIFUL FIGURES AND OF HUMPED OXEN OR GOATS, BLAUWBOSCHDRIFT. (*Scale  $\frac{1}{2}$ .*)



FIG. 30.—BANTU PECKING OF MEN ON HORSES, BLAUWBOSCHDRIFT. (*Scale  $\frac{1}{2}$ .*)

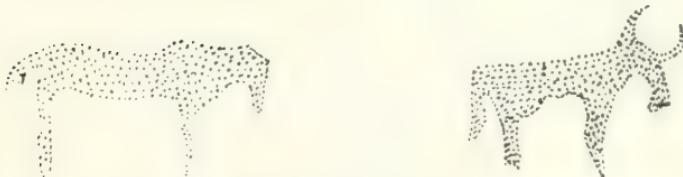


FIG. 31.—BANTU PECKING OF DOG (?) AND OX, BLAUWBOSCHDRIFT. (*Scale  $\frac{1}{2}$ .*)

neighbourhood, while men on horses are conspicuous. Geometric figures are also absent.

The three humped oxen (or goats (?)) Fig. 29) and the three men on horses (Fig. 30), in both of which groups the figures are shown in the relative positions they occupy on the rock, are very characteristic of the series. The highly conventional rendering of the latter is noteworthy. Another favourite subject was the ostrich.

The representations of an ox and dog (?), shown in Fig. 31, are very well done considering the limitations of this kind of work.

Other peckings (Fig. 29) seem to be purely fanciful, but may be merely poor work. The figure (Fig. 32) of a plough is interesting.

These peckings have weathered to the same colour as the rest of the rock-surface. On the same slab there are one or two figures that are evidently much more recent. In them the peckings are



FIG. 32.—BANTU PECKING OF PLOUGH,  
BLAUWBOSCHDRIFT. (*Scale ½.*)

comparatively fresh and show up well against the dark background. They are larger than the originals, of which they are imitations, and are markedly inferior in execution. None of the peckings, however, can be ancient. Neither the plough nor the men on horses are compatible with any antiquity.

I originally thought these peckings to be Solutric work, but I am now satisfied that they, like the most recent and inferior examples at other occurrences, are the work of Bantu.

#### ROCK-PAINTINGS.

The recent publication by Miss Tongue\* in colour of a large series of rock-paintings from different parts of South Africa renders it unnecessary to describe them in as much detail as the petroglyphs.

The petroglyphic art, despite the high degree of excellence that

\* *Bushman Paintings*, Oxford (1909).



FIG. 33. PORTION OF SOLTREAN ROCK-PAINTING IN THE LUJU MOUNTAINS.

it attained, laboured under obvious limitations unknown to painting. Hence it is that whereas the petroglyphs seldom represent other than disconnected objects, the rock-paintings frequently depict connected objects such as the participants in a hunt or fight.

The vast majority of the rock-paintings are merely silhouettes in which the outline is filled in with a uniform tint. They are mostly red, but are sometimes black. The figures of animals usually show real artistic merit, but those of man are always grotesque. Yet there is something life-like about them. In the representation of a Bantu wedding dance (Fig. 36), for instance, the very twist in



FIG. 34.—PAINTING OF TWO HAARTEBEEST FROM A ROCK-SHELTER NEAR CAROLINA. (*Scale ½.*)

the women's bodies is shown, and the actions they are going through plainly indicated.

Along the eastern border of Orangia and in the country south of the Orange River polychrome paintings occur in addition. The eland, for instance, which is actually one of the dowdiest of all the game, but was a great favourite of the Solutre people, no doubt on account of the quantity of meat it afforded, is frequently depicted in two or more colours; the neck and under part of the body is usually shown in white, and the upper part of the body in yellow, red, or brown. Some of the better polychrome paintings show distinct, though incipient, shading.

It is noticeable, both among petroglyphs and rock-paintings,

that while the ordinary representations of animals do not show any termination to the legs, the best examples show the extremities in considerable detail.

Many of the better, not necessarily polychrome, paintings depict dances, hunting-scenes, and fights, while they not infrequently represent myths.

The art of the Solutric people of South Africa attained its maximum in the painting, published by Miss Tongue, of the antelopes at a pool; in this not only are the antelopes well shaded but even the reflection of their legs in the water is depicted.

As in the case of the petroglyphs, crude Bantu imitations are present at some of the occurrences.

## CHAPTER IX.

### THEORETICAL INFERENCES.

Now that the more important discoveries of the remains of the Stone Age of South Africa have been reviewed, it is possible to discuss more fully the problem of the relationship of the post-Eolithic groups in West Europe and South Africa, and to enquire into the probable connection of the more recent of the South African remains with the historic aborigines, namely, the Bosjesman or Bushman.

The stone implements, it has been emphasised, mostly belong to two contrasting series represented respectively by the massive implements, such as amygdaliths and celts, and the flake-tools, of which the predominant form is the scraper.

It seems to the writer probable that all post-Eolithic assemblages comprised both elements, despite the frequency with which one is found to be present to the exclusion of the other in numerically important occurrences, and a consideration of the West European and South African occurrences from this point of view leads to a different explanation of the position of the Solutric groups to that generally held.

Considering first the massive implements, it is found that the following four groups present a complete and unquestionable evolutionary sequence :—

- (1) Typical Acheulic.
- (2) Advanced Acheulic (Vereeëniging-Luckhoff).
- (3) Early Neolithic (Cissbury).
- (4) Typical Neolithic.

This sequence, however, probably did not evolve in either of the areas under consideration, the second group apparently being unrepresented in West Europe,\* and the third and fourth absent from South Africa.

The character of the assemblages may be indicated thus:—

- (1) Amygdaliths.
- (2) Amygdaliths > Celts.
- (3) Celts > Amygdaliths.
- (4) Celts.

The discovery of the Vereeniging-Luckhoff group makes it obvious that if the Solutric (Aurignacien, Solutréen and Magda-



FIG. 35. ROCK-PAINTING NEAR CAROLINA, AND ESKIMO ENGRAVING OF SHAMAN. The latter after Dr. Hoffman.†

lénien) groups are complete assemblages, they can no longer be regarded as lying in the direct line between the Acheulic and the Neolithic.

Of these groups the Solutréen is almost certainly a complete assemblage, both amygdaliths and scrapers being abundantly represented. The Solutréen *feuilles de laurier* are more advanced than the Acheulic amygdaliths, but are clearly evolved from them. The absence of the Acheulic amygdalith and the Neolithic celt excludes this assemblage from the direct line.

It is unfortunate that there is a doubt as to whether the Aurignacien is separate from the Solutréen, or merely a facies of the same. Those who claim that the Aurignacien preceded the Solutréen cer-

\* Though, judging from description, probably represented by the Gargano, Breonio and Rivoli assemblages of Italy.

† The Graphic Art of the Eskimo. Memoir Smithsonian Institution. Plate 73 (1897).

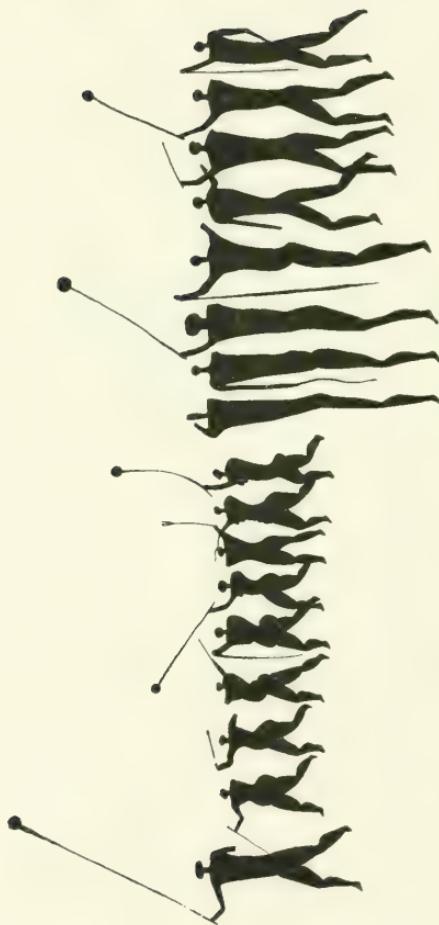
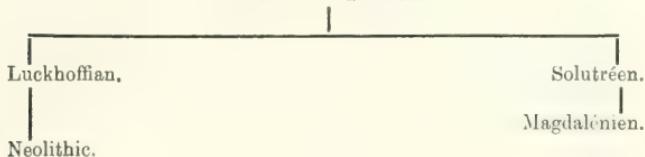


FIG. 36.—PAINTING OF A BANTU WEDDING DANCE. (See *Fig. 1.*)  
(From a copy by Mr. Stow. In collection of Prof. Young.)

tainly have the support of a persuasive array of evidence, and are probably right. It is also unfortunate that the Aurignacien is a part assemblage only, being almost entirely made up of flake-tools. According to Mons. Rutot\* the Acheulic type of amygdalith has been found in Aurignacien deposits, and if these are representative of the missing element the Aurignacien must be in part at least complementary to the Acheulic.

The Magdalénien is almost certainly more recent than the Solutréen. The following succession is thus arrived at:—

Acheuléen  
terminating in  
Acheulo-Aurignacien.



This interpretation of the sequence of the groups under consideration implies, of course, that the Luckhöffian (as I would term the Vereeniging-Luckhoff assemblage) is also a part assemblage, its complementary element being derived from, and probably resembling, the Aurignacien, so that, after all, it is probable that both in West Europe and South Africa, the Acheulic and Solutric implements are in part complementary to one another.

The only alternative explanation is to suppose that the massive implements and the flake-tools of pre-Neolithic times are not complementary, but are the characteristic artefacts of two entirely different branches of the human race, which supposition is, to my mind, extremely improbable.

The writer's impression is that the Acheulic assemblages of South Africa cover a wide range, both in time and stage of development; but the extent to which they may be equated with the Solutric implements is impossible to say.

It is noteworthy that implements clearly referable to the Luckhöffian have been recorded from India by the late Mr. Logan†, who fully recognised their position in the sequence. One might appropriately inscribe under Plate II. his remark that "the chopper

\* *Le Préhistorique dans l'Europe Centrale*, p. 74 (1911).

† *The Old Chipped Stones of India*. Calcutta (1906).



FIG. 37. TWO PAINTINGS REPRESENTING CUSTOM AND MYTH REFERRED TO IN MR. STOW'S  
*MATIVE PRACTICES OF SOUTH AFRICA*. (Scale 1.)  
 (From a copy by Mr. Stow in collection of Prof. Young.)

ultimately resulted in the Neolithic celt . . . every step is marked by examples in the Calcutta museum." For Fig. A, from Robinson, is almost identical with his "chopper" from Atrampakam, while Fig. C, from Vereeniging, is a celt of typically Neolithic form.

In view of the apparently recent date of the Solutric sites of South Africa, it is desirable to enquire into their probable connection with the known aborigines.

Now, there can be little doubt but that the stone implements

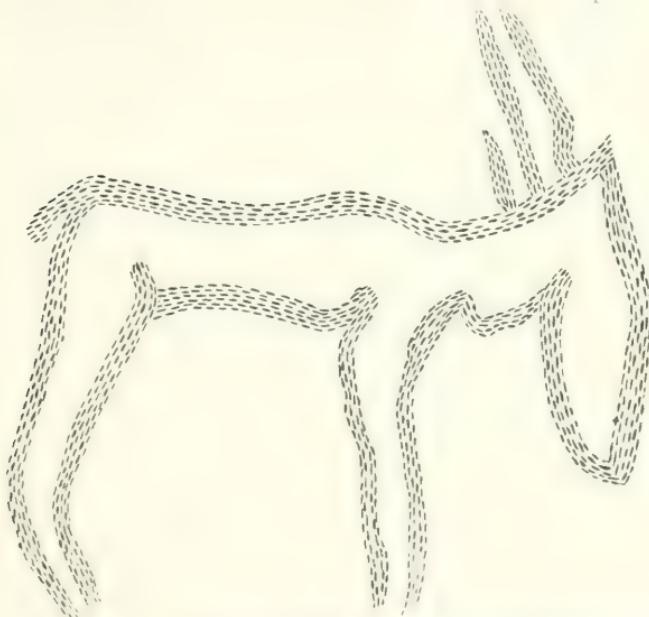


FIG. 38. BANTU IMITATION OF SOLUTRIC PECKING,  
WOLMARANSSTAD. (Scale  $\frac{1}{2}$ .)

found on them were made by the same people who made the petroglyphs and rock-paintings. This is suggested by the analogy of the Solutric sites of West Europe, and is confirmed by the occurrence of the two together in several instances. Further, these primitive works of art are unanimously referred by the Bantu and the European pioneers to the Bosjesman, whom they displaced.

It must therefore be concluded that the Solutric remains of South Africa are the remains of the known aborigines.

The little skeletons from the coast middens are identified by Dr. Péringuey, as belonging to the branch of the Bushman, known as Strandloopers.

There is good reason to believe that the Bosjesman were very far from a homogeneous people, and in this connection a statement made by Mr. Stow in his book on the Native Races of South Africa claims attention. It is to the effect that the sculptors and painters were two distinct divisions of the race. Further, Mons. Rutot, judging from my figures, suggests that the Riet and Modder group of Solutric implements are Aurignacien, and that the Taai-

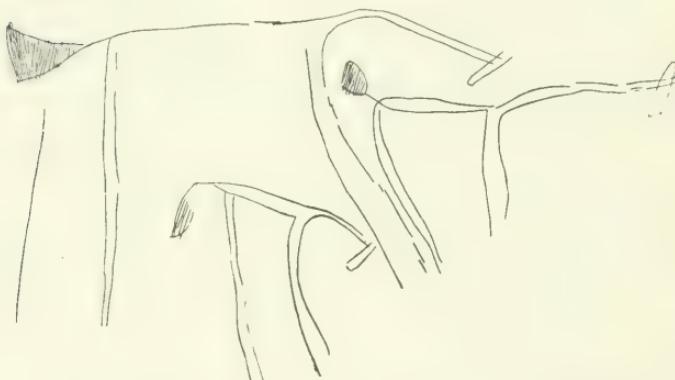


FIG. 39. BANTU ENGRAVING OF HORSES, BLOEMFONTEIN.  
(Scale  $\frac{1}{3}$ .)

bosch group corresponds to a late phase of the Solutric stage of West Europe, which he terms the pré-Tardenoisien, and which is characterised by the smallness of the implements.

It is true, as I have previously pointed out, that the petroglyphs and rock-paintings present considerable differences of style. It is also remarkable that the Riet and Modder group of implements is found associated with the former at several occurrences, whereas only the Taibosch group has been found with the latter.

I have, however, explained these facts in another way, and am

not yet prepared to alter my opinion. Still, these interpretations should be lost sight of.

Another interesting comparison between the Solutric culture of West Europe and South Africa is afforded by the burials in the Baoussé-Roussé caves, and those of the coast middens.

Probably the most ancient of all the interments in the Baoussé-Roussé caves is the famous double sepulture encountered at a depth of about eight metres. It consists of the skeletons of an old female and a young male, of low stature, possessing skulls with certain features that are now more frequent among negroids than among Europeans, but having no apparent affinity with the Bushman. They lay in a shallow trench, side by side, with the knees towards their chins. A rough stone, supported by two others, protected the skulls. The old woman had two strings of shells on the left arm, and the young man had a band of similar shells round his head. Flint knives (flakes) had been placed by their sides.

No other skeletons of this kind were found in the Baoussé-Roussé caves, but several of Cro-Magnon type were found, including two from higher levels of the same cave. They lay sometimes on one side and sometimes on the other, and sometimes on their backs, and more or less at full length, but were provided with similar funeral furniture. One had his head and feet protected by slabs of stone, another had a head-rest of the same, while a third was wrapped in a hide.

How many are the points of similarity between these funeral rites, and those of the interments in the coast middens!

It is noteworthy that the Bushman was the only people to retain the Solutric culture up to historic times in an approximately pure form, though the cultural stage of the Australian Blackfellow and the American Eskimo, is probably a much modified survival of it.

It is now almost certain that the Solutric peoples had an extended geographical distribution at a remote period, and it is only natural that their widely separated survivors should present considerable physical and cultural differences.

## CHAPTER X.

## THE PRE-HISTORIC BANTU.

SCATTERED throughout the now sparsely inhabited bush country of north-eastern South Africa are abundant proofs of the former widespread population of the country by the Bantu or Kafir peoples.

Evidence of their agricultural activities is met with in every direction. In the flats the stones have been sorted out of the soil and piled up in small heaps, while on the hillsides they have been arranged in parallel rows in order to serve the additional purpose of holding back the soil in terraces. Large pebbles, worn down on both sides to a flat disc by rubbing, are to be found everywhere, as also are the polished slabs of stone with which they were used, and the pounding stones and hollowed out blocks of rock that served the purpose of pestles and mortars.

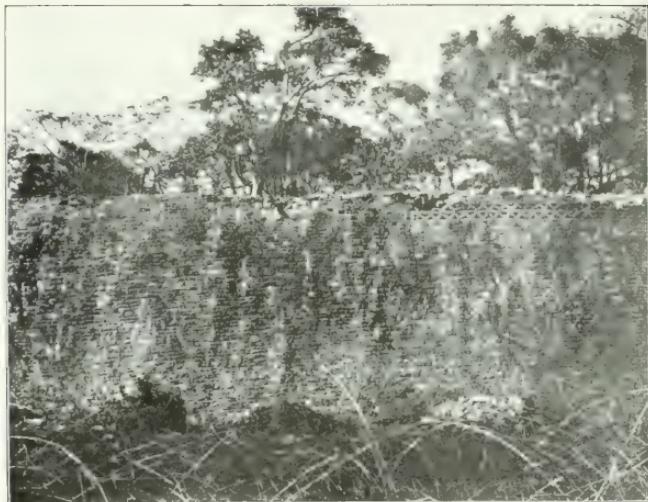
Equally widespread are the remains of their mining and smelting operations. Old workings on iron and copper ores are scattered throughout the whole area, and associated with them are slag heaps and fragments of clay furnaces. While most of these old workings are situated on small pockets of ore that would not pay to extract nowadays, and are mostly very shallow,\* yet, in the aggregate, they must have yielded an enormous amount of metal. Small boulders of quartz and other hard stone, that have been employed in crushing the ore, are frequent at these workings, and close by one can usually find the corresponding hollows in the rocks. Very often, as

---

\* The deepest workings are those at the Gaika mine, which are said to reach a depth of over sixty metres. This depth, however, is quite exceptional; the average is probably not more than twenty metres. None extend below the subsurface water level.



A



B



PLATE I. ZIMBABWE RUINS.

(A) EXTERIOR OF MAIN BUILDING, SHewing CHEVRON PATTERN.  
(B) INTERIOR OF MAIN BUILDING, SHewing CONE, ETC.



PLATE VI. ZIMBABWE RUINS.

(A) SOAPSTONE POST WITH CARVED BIRD AND CROCODILE.  
(B) MONOLITHS NEAR WEST ENTRANCE OF MAIN BUILDING.



at Palabora, the Solutric perforated stone balls were used for the same purpose. Again, clumsy large wheel-shaped perforated stones of Bantu manufacture are often associated with the other remains, but their use is uncertain.\*

From some old workings on iron ore situated near Rustenburg I have a small boulder of quartz, in the four sides and one end of which deep indentations have been worn through its having been used to strike an iron rod; with it were found the iron rod, rusted to the core, and some polished red and black pottery with characteristic geometric decoration.

Even tin was mined and smelted. At the Rooi Berg, some sixty kilometres west of the village of Warmbaths, there are old workings on tin ore covering an area of thirty hectares. Hammerstones and picks consisting of wooden handles through the knobbed ends of which iron gads have been inserted are found in them. At two spots slag heaps, broken tuyeres, and pieces of smelting pots have been discovered.

Remains of the elliptical walls of uncemented stones, with which the Bantu sometimes enclosed their perishable huts and penned their cattle, are dotted over the whole country.

The mining and smelting industry, and the art of building in stone, attained their maximum in the abundantly metalliferous country between the Limpopo and the Zambesi, where, in addition to iron and copper, and probably tin (for masses of that metal have been found in the ruins there), gold was extracted on an extensive scale, and buildings possessing a certain barbaric magnificence were evolved.

Messrs. Hall and Neale have given in their *Ancient Ruins of Rhodesia* a list of more than 120 localities in which ruins of various

\* I have also in my collection two examples made of tabular pieces of stone, and approximately oblong in outline, but with corners and edges rounded off, which present a contrast in size comparable to that of the Solutric stone balls. The one which I came across in the Selous valley measures  $20 \times 17 \times 8$  centimetres, and the other, which was obtained by my friend, Mr. Atkin, in the Steynsdorp valley, measures  $50 \times 45 \times 15$  millimetres. The latter was being utilised by a Kafir woman in holding together a bundle of sticks; the cord encircling the bundle was, at the one end, tied to, and, at the other, passed through the hole in the stone. Whether the user was the maker or whether it was originally intended for that purpose is doubtful. Associated with the ruined kraals in the Steynsdorp valley are quantities of flat pieces of soft stone in which, though otherwise untrimmed, conical holes have been gouged. They would have served the same purpose.

sizes are reported to exist. They range from small ruins of a construction no better than the ordinary enclosure, to extensive ruins of altogether superior construction—from those with walls built of undressed and irregularly placed stones, to those with walls made of neatly coursed blocks of trimmed stone. The size of some of the latter, such as Khami, Dhlo-Dhlo, Chum, M'Popoti, Mundie, and Zimbabwe indicates that they were important centres, the last, however, being by far the greatest.

Of the smaller and ruder ruins the Inyanga fort affords a good example.

It occupies a strong strategic position on the highest point of a prominent ridge, and commands an extensive view of hill and dale dotted with the remains of stone walls and with ruined dwellings.

In construction it differs little from the ordinary cattle enclosure, being built of undressed stones irregularly placed one on top of the other, while in plan it is merely a number of similar enclosures joined together. The walls, however, are modified to suit the purposes of defence.

The exterior walls average 2·5 metres in height, and, as in the other forts, are made up of two parts of about equal thickness, namely, an outer wall and a banquette running round the inside, which in this case is about a metre lower.

The entrances are just the height for a man to pass through in a stooping posture and are roofed with lintels of single slabs resting upon the sides.

The exterior walls vary much in width from point to point—a characteristic feature of all the ruins—and are riddled with loopholes.

Within these fortifications are situated the foundations and walls of some score of circular huts.

The Inyanga fort is one of a number of similar buildings that are scattered over a tract of country strewn with the ruined dwellings of a big agricultural population.

In all fundamental respects the Inyanga fort is the prototype on a small scale and in inferior construction, of the more imposing or Zimbabwe type of ruins. One has only to compare the plan of the



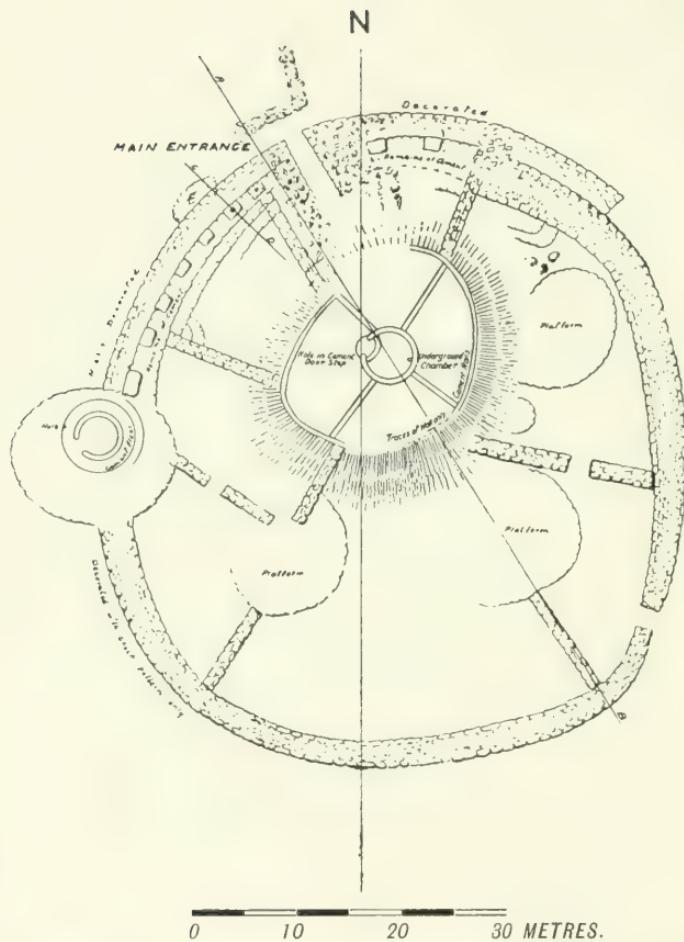


PLATE VII.—PLAN OF NANATALI (AFTER MR. POPHAM), SHEWING  
CEMENT PLATFORMS. FROM THE PROCEEDINGS OF THE RHODESIA  
SCIENTIFIC ASSOCIATION.

Inyanga fort with that of Nanatali, or even of the grandest of the ruins, namely, the main building at Zimbabwe, to realise this fact. The superiority of the latter lie almost entirely in their size and construction.

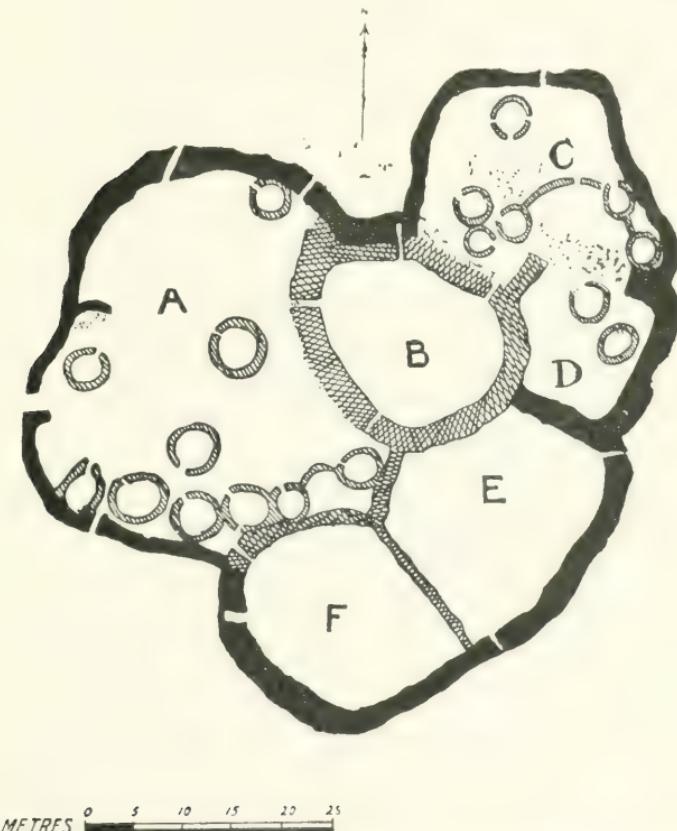


FIG. 10. PLAN OF INYANGA FORT. (After Dr. Randall-MacIver.)

In external appearance, indeed, there is a marked difference between the first and second types. The low walls, built of undressed and irregularly placed stones of the former, are superseded

in the latter by high walls built of neatly coursed blocks of trimmed stone.

Granite is the prevalent rock in the country over which the Zimbabwe type of ruins are scattered: sometimes it weathers into kopjes resembling piles of big boulders, and at others it forms great bosses. The ruins are usually situated on these bosses and in commanding positions. Their outer walls, approximately, follow the contours of the summit, and are constructed of roughly rectangular blocks of granite laid in even courses.

The blocks, it must be explained, are not hewn out of solid granite. As first pointed out by Mr. Mennell, the granite scales off the bosses in large sheets up to 30 centimetres thick, and the blocks, which probably average 25 centimetres in length by 10 centimetres in height, were obtained by merely splitting up these sheets.

The best walls are solid throughout, but many are merely faced with stone, the space between the faces being filled up with rubble. No cementing material was placed between the blocks. A noteworthy feature of all the walls is that they unintentionally vary in thickness from point to point.

When a large boulder was encountered during the construction of a wall, it was incorporated.

The walls are ornamented with one or more rows of geometric design. By leaving out alternate blocks in successive courses, and by replacing some of the courses by inclined slabs of different stone, the chessboard, cord, herring-bone, and chevron patterns were produced.\* More rarely the dentelle pattern, obtained by arranging the blocks with one corner pointing outwards, was employed. Courses of rock of a different colour were also frequently inserted.

Untrimmed elongated slabs, or monoliths of various rocks, were placed upright on the walls of some of the ruins. At Zimbabwe pillars of soapstone, carved at the top to represent perched birds of prey, occurred in addition.

Probably the most remarkable structure connected with these ruins is the celebrated masonry cone in the main building at Zim-

---

\* These it should be noted are the characteristic decorative patterns of the Bantu, and are to be seen at the present day in all the kraals of the more cultured and non-Europeanized tribes, painted on the walls of their huts, woven into their basketry, baked on to their pottery and carved on their wooden utensils.

babwe. It is rather more than 10 metres high and measures 5·5 metres in diameter at the base, and is built solid in the same way as the walls. What it signifies is an unsolved problem. By its side are the remains of a smaller circular erection, but it seems uncertain whether it was another cone or not.

Circular platforms of cement, reached by means of steps of the same material, are a prominent feature of the interior of these ruins, and in many cases still retain the walls of the huts that they supported. The same kind of cement often lines the more roughly built interior walls.

I have already pointed out that in plan there is no essential difference between the Inyanga and the Zimbabwe types of ruin. The difference is almost entirely in size and construction. The foregoing description of the main features of the latter class of ruin will show how great this difference is. But between the one and the other quality of construction every gradation is to be met with. In fact the numerous ruins present a complete picture of the evolution of the Zimbabwe type of building.

There can be no doubt that these ruins are the work of a Bantu people\* that in some respects attained a more advanced stage of culture than any of the surviving tribes. The ornaments, weapons, and pottery found associated with the ruins are characteristically Bantu. Apart from glass and porcelain beads comparatively few imported articles are met with.

Zimbabwe was the fortified kraal of the paramount chief. Inside its walls were situated the huts of his wives and children and of his head men and their families. The other similar buildings were the residences of the lesser chiefs. Around or near these imposing structures were grouped the huts of the common people.

The connection of these people with the mining industry is shown by the crucibles and ingot moulds, and by the beads, bangles, and other ornamental objects of gold found in the ruins.

It is probable that their chiefs traded gold with the Arabs on the east coast, and it is not impossible that Arabs helped in the mining operations.†

In this connection see paper by Mr. Venning, in the *Journal of the African Society*, VII., 150-158 (1908).

† See Appendix II.

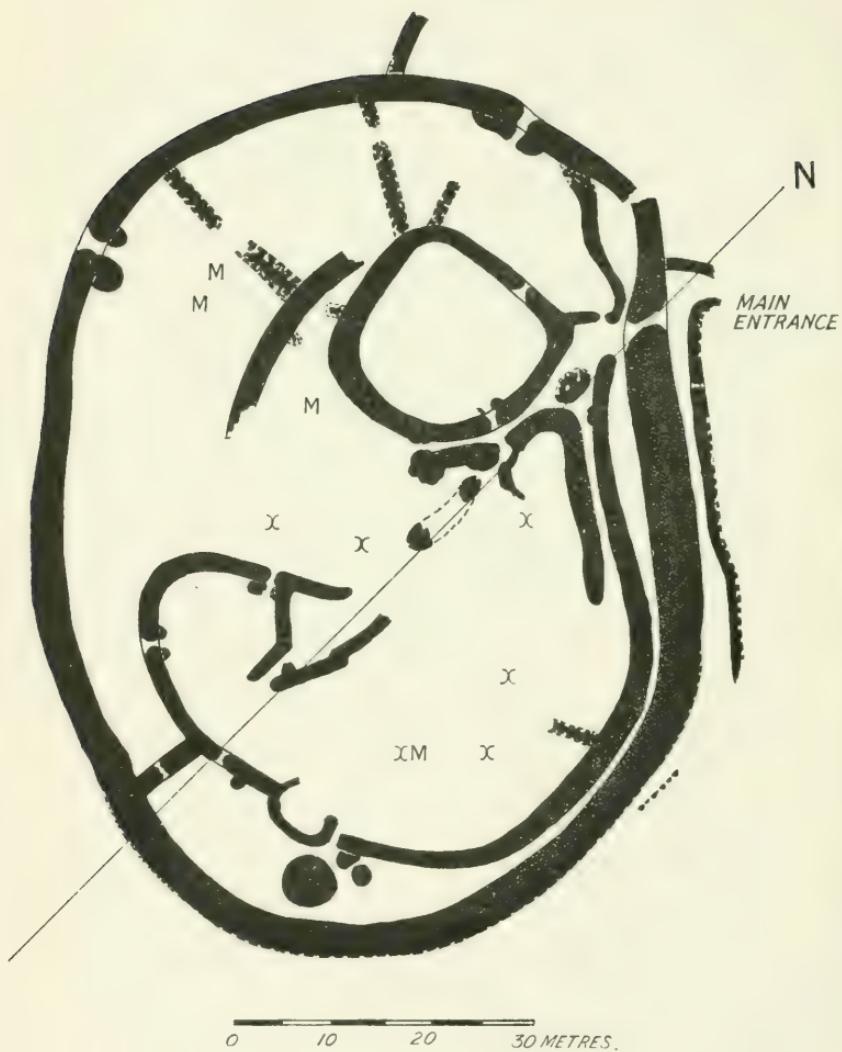


FIG. 41.—PLAN OF MAIN RUIN AT ZIMBABWE (BASED ON MR. FRANKLIN WHITE'S MORE DETAILED PLAN IN JOURNAL ANTHROPOLOGICAL INSTITUTE, XXXV., 1905).  
 M = MONOLITHS. X = PROBABLE SITES OF CEMENT PLATFORMS ACCORDING TO DR. RANDALL.  
 XM = PLATFORM WITH MONOLITHS.  
 The portion of the enclosing wall decorated with Monoliths and Chevron pattern is indicated by broken dotted line.



A



B



PLATE VIII. BANTU BUILDINGS.

(A) ENTRANCE TO RUINED KRAAL.

(B) ENTRANCE TO INHABITED KRAAL, MASIBI'S LOCATION.

A



B



PLATE I.—BANTU BUILDINGS.

(A) REMAINS OF STONE HUT.

(B) MODERN MUD HUT, WITH WOMAN GRINDING MEAL (WITH STONE GRINDER ON STONE SLAB) IN FRONT. MASIRO'S LOCATION.



It is not difficult to guess what happened to the people who erected these buildings. No doubt, then, as within historic times, the country was periodically over-run by war-like tribes who made a living by killing and robbing the more peaceful and industrious tribes. It was to a series of these raids that the builders of the ruins succumbed. Bantu culture, then, received a setback from which it has never recovered.

It is manifestly impossible in a work of this character to give any other than a very brief and general account of the interesting ruins above dealt with, and, indeed, the wealth of data recorded in the several books and numerous papers specially devoted to them renders this unnecessary. Since Mr. Bent's investigations published in his *Ruined Cities of Mashonaland*, a vast amount of facts has been accumulated, mainly by Rhodesians, among whom Mr. Franklin White and Mr. Hall must be specially mentioned—the former mainly on account of the splendid plans he has caused to be prepared of various of the better ruins, and the latter chiefly because of the quantity of information he has collected regarding Zimbabwe—while Dr. Randall-Maciver, in his *Mediaeval Rhodesia*, has made us acquainted with that remarkable and extensive complex of pit-dwellings and forts which he terms the Niekerk ruins, and, what is more important, has given us the true interpretation of the accumulated archaeological data.

A survival of this culture still exists in the Masibi reservation. This is an extensive tract of country occupied by a section of the Bantu people, and situated on the right bank of the Magalakwin river, north-west of Potgietersrust. The whole area was formerly under one chief of that name, but on his death it was divided into a northern and southern portion under his sons Hendrick and Hans respectively.

In passing through this area in 1910, I came across the remains of a group of old kraals that had a special interest in that they possessed many of the characteristic features of the better ruins north of the Limpopo. I learnt that these were inhabited up to about 1897, when they were set on fire during a fight between Hendrick and Hans. I also saw a number of inhabited kraals of the same kind. Since the old kraals, now represented by little more

than the stone walls afforded, in their ruined condition, a better comparison, I devoted most of the little time at my disposal to making plans of as many as I could. I also secured a number of photographs of both the ruined and the inhabited kraals.

These old kraals are ranged along the western foot of Ramoo Kop, which is situated on the boundary between the northern and

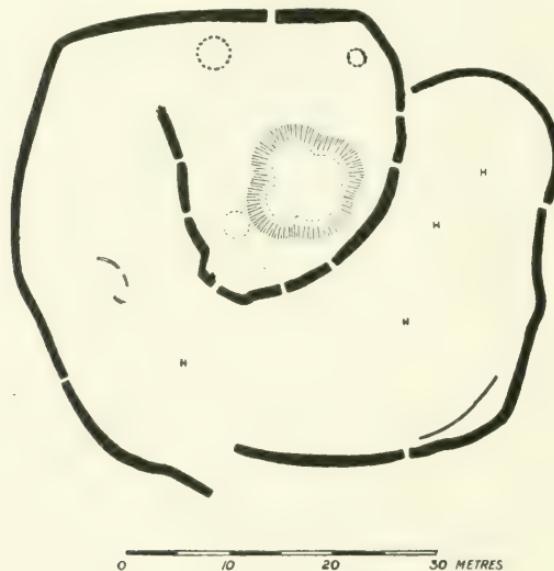


FIG. 42.—RUIN NO. I. RAMOO KOP.

southern divisions of the reservation, and number eleven in all. Of these I surveyed the first four, counting from north to south.

All four ruins, though differing much in form, are built on the same general plan, that is, they each consist of an inner enclosure, containing a shallow pit, surrounded by a mound and an outer enclosure containing the remains of huts.

The wall of the inner enclosure is, in each case, higher and more neatly built than that of the outer, and was once completely

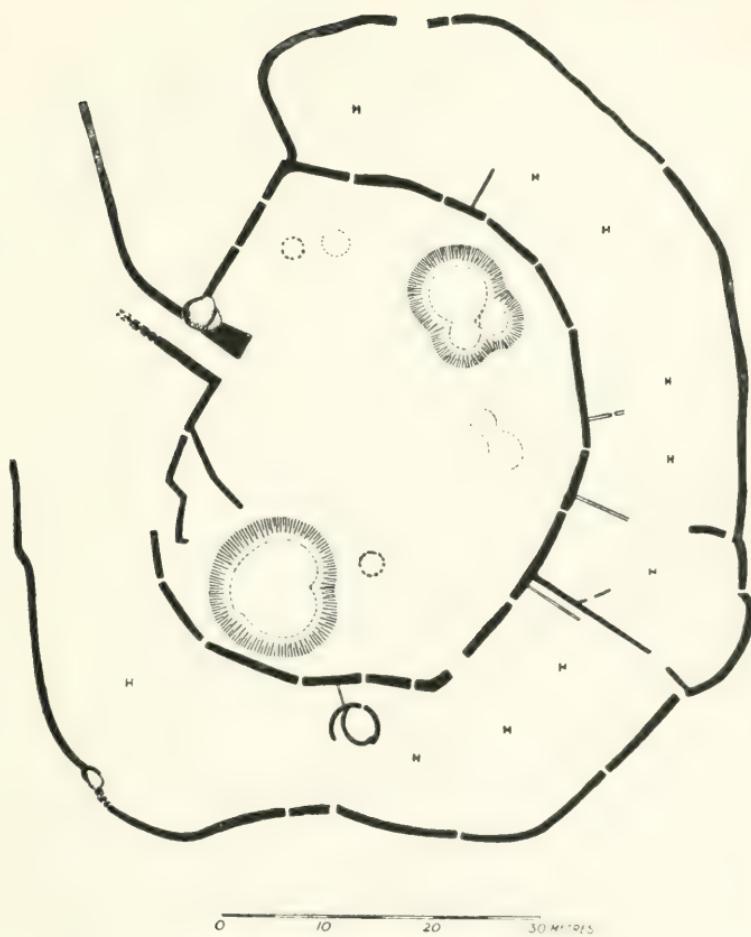


FIG. 13. RUIN NO. II. RAMOO KOP.

plastered over with mud<sup>4</sup>. The former is mainly built of split, though not trimmed, slabs of gabbro-diorite, and the latter is largely made up of rounded and irregular pieces, but both exhibit considerable variation in quality of construction from point to point. They similarly vary in height, which ranges from one half to one and a half metres and, as will be seen from the plans, in width.

The plaster is largely preserved at No. II. ruin, and also at No. IV. ruin, but only traces remain at the other two. One small patch still retains the red and white geometric decoration. At the No. III. ruin the high door-posts of the same material are preserved at two entrances.

The entrances are mostly rectangular, but in ruin No. IV. there are two rounded examples. In the one, the main entrance, the rounding is due to its being built of boulders, in the other squared slabs are used and the rounding intentionally produced, but, curiously enough, one of the four corners is rectangular.

The two stone-built hut walls are interesting. They are both very neatly constructed, and differ from the other walls in that the slabs of stone, some of which are distinctly trimmed, are laid in a mortar of mud. That in No. III. ruin is the better preserved, and still retains two patches of decorated plaster on the inside. The inner arc of the other seems to be a later addition, and is a low wall, very roughly built without mortar, but the whole is much fallen in.

The outer enclosure was originally split up into compartments by means of radial mud walls, and each compartment possessed an entrance to the inner enclosure and contained a hut. Portions of these dividing walls are still standing in No. II. ruin, which is both the largest and the best preserved of the group. The circular cement hut foundations, from which the bottoms of the posts that supported the roofs still project, though now largely concealed by soil, can still be traced, while, in some cases, portions of the mud walls, shewn on the plans, are still standing. In No. II. ruin no

<sup>4</sup> Mr. Franklin White (Proc. Rhodesia Scientific Assoc., IV, 15) in describing the Khami ruins mentions the presence on some walls of a coating of cement or plaster, and remarks that "this probably covered the whole of the interior walls . . . and also formed the floor." The outer enclosure of the inhabited kraal referred to later had a cement floor.

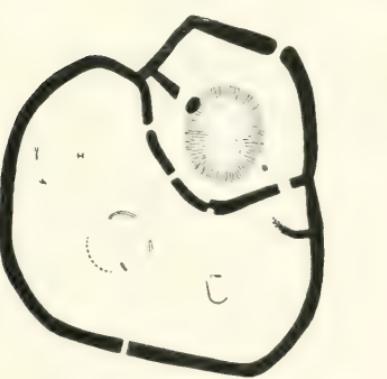
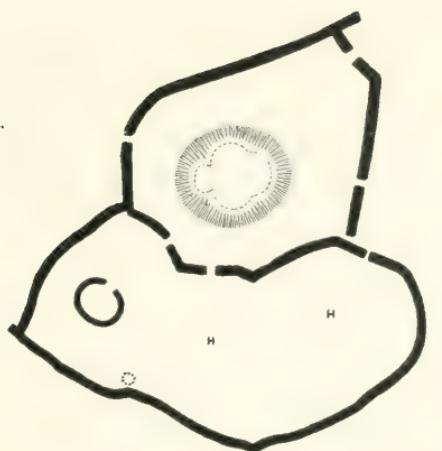


FIG. 44.—RUINS NOS. III. & IV—RAMOO KOP.

less than eleven of these hut foundations are shewn, and the reader will readily perceive the probable positions of four more. With a little excavation one could restore all the interior features of these ruins.

The hut sites are strewn with broken hand-made pottery, some of which is plain, some incised with cord, herring-bone and similar patterns, and some polished with both incised and painted geometric decoration.

In the plan of ruin No. IV. I have shewn a small heap of stones. In the outer enclosure of ruin No. II. there are a number of these small heaps. I do not know their purpose. They remind me of the heaps of stones that the Kafirs sort out of the soil during their agricultural operations.

There are many similar kraals still inhabited in the neighbourhood, and they shew that the outer wall was capped by a fence of cut bushes, and that the inner wall was capped by grass matting.

These kraals also shew the purpose of the inner enclosure. Its primary object was to stable the animals at night, these being herded in one or more lesser enclosures of cut bushes. It was also used as a place of assembly. Under its floor was buried the store of grain, the rifling of which has given rise to the mound encircled pits. The smaller circular depressions were fire-places, where pots and other things were baked.

The wall decoration is in red and white, which colours were obtained by powdering ochre and limestone: lately, blue, obtained from traders, has been added in some cases.

In other kraals in the neighbourhood, stone walls have been discarded.

Pottery with similar, but not always quite identical patterns, to those from the ruins, is made, and is in general use in the kraals visited by me, but as I only visited a few out of the many, no importance must be attached to the differences. It is noteworthy that the polychrome ware is neither reserved for special persons nor for special occasions, but is as much an article of daily use as the plain, the degree and style of decoration going with the class of utensil. The colouring materials are wood-ash for white, ochre for

red, and graphite for black. The pottery, it may be remarked, is made by the women.

Another common household article is a conical dish of marula wood, round the rim of which is carved the chevron pattern, sometimes single and sometimes double, as on the main building at Zimbabwe.

In and around these ruins, large pebbles, worn down on both sides to a flat disc by rubbing, abound, as also do the polished slabs of rock with which they were used, and the pounding stones and hollowed out blocks of stone that served the purpose of pestles and mortars.

On the other side of the Magalakwin, on the road from Potgietersrust to the tin mines, and not far from the latter, are the remains of a kraal that was inhabited until recently, when the inhabitants burnt it down and removed to another spot nearer the river. In what was the inner enclosure of this kraal, recognisable, though it had no stone wall, but merely a fence of cut bushes, because it contains a dumb-bell shaped grain pit, without, however, any surrounding mound, and the smaller circular fire-place, stands a stout tapering pole about five metres in height. This is decorated with alternate plain, black and red bands and has the head of what appears to be a hornless ox carved on the top. In the inner enclosure of the new kraal, which likewise has a fence of cut bushes only but shews no pit, a similar pole painted with alternate bands of black and white, and surmounted by a rag model of what appears to be the head of a hare, has been erected. Owing to my ignorance of the language, I was unfortunately unable to obtain any satisfactory information regarding these poles, but gathered that they were connected with initiation ceremonies. Can these be homologous with the birds-on-posts or the conical tower at Zimbabwe?

## APPENDIX I.

THE SEQUENCE OF THE STONE IMPLEMENTS IN  
THE LOWER THAMES VALLEY,

BY

A. S. KENNARD, F.G.S.

IN the main valley of the Thames, as well as in the tributary valleys, there are to be found at various heights above the streams deposits of gravel, sand, and brick-earth, which are obviously fluvialite deposits laid down by these rivers when the relative levels of sea and land were different from what they are at present. Besides these there are other fluvialite deposits which are not so intimately connected with the present river system. Sometimes they occur on a watershed; at others they are to be found on the top of hills and, as a matter of fact, these hills owe their existence to the presence of these gravels, whilst the constituents of the gravel show that the drainage areas were very different when these gravels were deposited, from what they are at the present time. In many of these deposits stone implements are to be found, whilst more rarely bones of vertebrata and shells also occur. It is from these deposits that the early history of man in the lower Thames valley has been deduced. It is perhaps fortunate that the geological history of this valley is a fairly simple one, and unlike what occurs on the Continent, where the history of a valley is often very complicated owing to repeated oscillations in level. From the time when the land first emerged from out the old Pliocene sea, the land appears to have risen intermittently, with only one reverse move-

ment, until it stood at least 100 feet higher than it does to-day. Since then a reverse movement has set in, and the land has gradually gone down until the present day.

During the whole of this period river action has been going on and has produced the results which have already been described. It is thus obvious that the oldest deposits are the highest, a view which has the support of all the available evidence, whether paleontological or statigraphical. It is, however, quite impossible to give all the evidence bearing on the subject, and only the main outlines and conclusions can be given.

#### THE PLATEAU GRAVELS.

The oldest deposits in which human relics have been found are situated on the Kentish Plateau. These must be of immense antiquity, for they are the oldest flumatile beds in this area since it became dry land in Pliocene times. As an indication of the time that has elapsed, one may mention that the whoue of Holmsdale has been excavated since they were laid down. To appreciate this one must stand on the edge of the plateau, and view the broad valley at one's feet. It is then one realises the enormous antiquity of these deposits, and their contained human relics, and how impossible it is to fix their age in years. One can only use the old expression, "once upon a time."

It is from these beds that the "Kentien Eoliths" have been obtained. The word Eolith has been so misapplied that it is advisable to use the term "Kentien," since they form a group by themselves and are quite distinct from the so-called Eoliths from the basement bed of the Red and Norwich Crags. These latter may well be the result of natural forces, for a sea bottom is a very unlikely place to find abundant human artefacts in, and, judging from what has been found and the area of these Pliocene deposits, these so-called implements must occur in millions.

The Kentien Eoliths are naturally shaped flints with artificial chipping at the edge. Sometimes, however, the chipping, though of the same primitive character, is not confined to the edge. Unfortunately, the tendency has been to accept too much, but if

one eliminates all the doubtful examples there still remains a large number which must be considered of human origin.

Unfortunately, no remains of mammalia or mollusca have yet been found, though it must be remembered that similar gravels at Dewlish, Dorset, have yielded remains of *Elephas meridionalis* in association with Eoliths similar to those from the Kentish Plateau.

### THE HILL GRAVELS.

These are a series of isolated patches of gravel occurring at Maplescomb and Ash, and possibly elsewhere. The implements which occur in these gravels show a decided advance on the "Kentien Eoliths." These comprise used flakes, flakes with trimmed edges and primitive amygdaliths. The work is, however, still primitive, but implements occur: attempts having been made to flake the stones to a definite shape. These implements often occur as derivatives in the later gravels, but their condition at once shows their true age. When these gravels were first described by the late Sir Joseph Prestwich a number of gravel patches in the neighbourhood of Ightham were included, but the implements which these yield are of much later date, and they are probably of the same age as the high terrace of the Thames. Then, again, no other fossils are known from these beds.

### THE HIGH TERRACE.

The next deposit is well developed in the main valley, and is the well known high terrace. It is a well marked feature, and can be traced easily on both sides of the Thames, especially where the presence of the chalk has hindered destruction. The great antiquity of this terrace is perhaps not realised, for though its base is about ninety feet above the present river it must be remembered that it is nearly 200 feet above the bottom of the valley.

From its extent and the amount of erosion which it represents it is obvious that the base level of the stream must have remained constant for a vast period of time. It has long been recognised that there are differences between the implements from the several pits, and three distinct groups can be recognised from it.

The well known Milton Street pit is in the main Chelleen,

though in the top bed implements belonging to St. Acheul I. occur; Galley Hill, which yielded the well known human skeleton, is also Chelleen; the small pit near Ingress Vale, commonly called the "shell pit," is certainly St. Acheul I., whilst at Dartford Heath a large number of St. Acheul II. implements has lately been found in a small channel cutting across the main mass of the gravel, which latter is probably Chelleen, whilst a brick-earth on the same level, near Greenhithe, has also yielded examples of St. Acheul II. The Chelleen implements shew a decided advance on those from the hill gravels. The makers were more skilled, and they had a better knowledge of the qualities of flint. Many of the tools are large, and so are the waste flakes, which latter are abundant. Very often a portion of the original crust is left. The St. Acheul I. implements from the shell pit exhibit much better workmanship. They are decidedly smaller, the flaking is much finer, whilst ovoids are common.

The St. Acheul II. implements from Dartford Heath and Greenhithe exhibit still better workmanship, the small ovoids being masterpieces of flint chipping. It is almost certain that the group of implements from Ightham, usually termed "Rock shelter," are a still further development of St. Acheul II., and their age is thus probably a little later than the high terrace. This is borne out by the recent discovery of an implement of this type at an elevation below the high terrace.

The fauna of St. Acheul I. is practically the only one known, although *Elephas antiquus* and *Hippopotamus*, are known from the Chelleen gravel. The fauna of St. Acheul I. stage obtained from the shell pit is a very remarkable one. All the vertebrata are decidedly southern, and, speaking broadly, "they approach those occurring in the Forest Bed series and the Upper Val d'Arno Pliocene" (M. A. C. Hinton). They include *Trogontherium*, *Equus* sp. approaching the Pliocene *E. stenonis*, *Sus* sp. a form with a very primitive foot skeleton, *Elephas antiquus*, and an extinct mouse, *Mimomys cantianus*. In the mollusca the most noteworthy forms are *Valvata antiqua* *V. naticina*, *Vivipara diluviana*, *Unio batarus*, and *Neritina crenulata*, the latter a Miocene species allied to *N. danubialis*, this being its last appearance.

## THE MIDDLE TERRACE.

At the close of the high terrace period an uplift occurred, and the land rose intermittently until the land stood slightly lower than it does to-day.

An enormous amount of time, judging by the amount of erosion and the differences in the faunas, must have elapsed between the high terrace and the middle terrace, but this is partially bridged over by some intermediate deposits at Grays and Ilford.

At Grays, the older brickearths have yielded an abundant fauna, and this is obviously later than the one from the High Terrace; in fact, it may fairly be described as descended from it, though there are one or two forms, such as the ape (*Macacus pliocenius*), which have no representative in the older deposit. In the mollusca *Valvata antiqua* is exceptionally abundant, but this is the latest horizon in which it occurs. Unfortunately, when these beds were extensively excavated, flint implements were not recognised, whilst the few that have been obtained in recent years are either non-typical flakes or derivatives.

At Ilford, however, which is statigraphically later than Grays, we are on safer ground, and here the contemporary industry is "Mousterien," a few flakes and implements having been found. The fauna of Ilford is nearer to Grays than it is to Crayford. At Crayford, however, which is statigraphically later than Ilford, we find quite a different fauna. Here the Northern species, such as Musk Ox, Lemmings, *Rhinoceros antiquitatis* and *Spermophilus*, occur. But there is no evidence as to colder conditions; in fact, all the evidence shews that the climate was very similar to that of to-day. The human industry is Mousterien, the site of a working floor having been found by F. C. J. Spurrell at Crayford. With Crayford may well be classed the brickearths at Northfleet, where thousands of implements and flakes of the same period have recently been found, as well as the later brickearth at Grays, where a similar working floor was discovered at the foot of the old buried cliff by M. A. C. Hinton and the author. The implements and flakes are identical with those from the cave of Le Moustier, France, which is usually considered the oldest of the French caves. In England,

however, the lowest level at Kents Cavern is much older than the Mousterien, and may well be Chelleen.

The implements from the middle terrace are well made, and great skill and dexterity is shewn in detaching large flakes. Apparently towards the close of the middle terrace period there was a submergence, but elevation set in again until the base level was about twenty feet lower than it is to-day, and the third terrace was deposited.

### THE THIRD TERRACE.

This terrace is only seen in chance excavations. Nothing was known of its fauna and flora until S. Hazzledene Warren, F.G.S., made careful collections from Ponders End and Angel Road, in the Valley of the Lea, and we now know that these indicate a climate similar to that of Lapland or Southern Iceland. The vertebrata include the mammoth, reindeer, lemming, and *Rhinoceros antiquitatis*. So far as the lower Thames Valley is concerned, the reindeer makes its first appearance at this horizon. The most noteworthy forms amongst the mollusca are *Sphyradium columella* and *Vertigo parcedentata*, both of which are high Alpine forms at the present day. Unfortunately, no implements are known from this gravel.

### THE BURIED CHANNEL.

At the close of the third terrace period, a great uplift ensued. The full extent of this uplift we do not know, since it is not certain that the Thames had reached base level, and though the channel is known to be 100 feet deep towards the mouth of the Thames, it is not improbable that the lowest part of the channel has not yet been reached. Neither implements nor fossils have as yet been obtained which can be definitely shown to be of this age, but this is not surprising, since it was apparently a period of erosion, and not of deposition. Possibly to this period may be assigned the working floor discovered by the author at Uxbridge, and which occurred on top of the third terrace and under the alluvium. Similar implements and flakes have also been dredged from the bed of the Thames. These are, undoubtedly, of Magdalenien age, the industry being

fixed by the abundance of long flakes, characteristic cores, and the presence of double scrapers. The associated fauna is unknown, though possibly the mammalia dredged from the North Sea may be of this age. As already noted, it is not known whether base level was reached, and, geologically speaking, the buried channel stage was not a very long one. However, a reverse movement set in, the land gradually sank, and the modern alluvium accumulated in the valleys. It is in this alluvium that Neolithic implements occur, as well as tools of the Bronze and early Iron ages. This movement of subsidence has been intermittent, and two well marked layers of peat occur, and it is in the upper layer that Bronze age relics are found. It is obvious that there must be a sequence on the Neolithic tools, but so far this has not been shewn. Apparently since early Roman times the land has gone down about eight feet.

---

[Note: The Early or Eolithic gravels of my Introduction are here divided by Mr. Kennard into Plateau and Hill gravels. The Swanscombe Hill patch is probably an outlier of the former, but may possibly belong to the latter.

In view of Mr. Kennard's correlation of the low-level brickearth implements with those of Le Moustier, it is noteworthy that this cave has yielded the skeleton of a young Neanderthal man. With him had been buried a fine Acheuléen amygdalith and many Moustérien flake-tools.

The third terrace is shewn in the Section in the first chapter, as a black patch between the Crayford Brickearth and the Alluvium of the Buried Channel.

May not Mr. Kennard's Uxbridge implements be Early Neolithic and complementary to the Cissbury assemblage in which, though subordinate to the celt, a modification of the Acheuléen amygdalith is an important element? The forms of scraper mentioned are common to the Solutré (Aurignacien, Solutréen and Magdalénien) and Early Neolithic (Campignyien) of the adjacent European Main-land.—J.P.J.]

TABLE.

STRATIGRAPHICAL SEQUENCE.		PALEONTOLOGICAL SEQUENCE.						HUMAN INDUSTRIES.	
Plateau (Gravel)	...	...	...	...	...	...	...	...	Kenton Eloliths.
Hill Gravel (Ash m. Wrotham)	...	...	...	...	...	...	...	...	Proto-Chelleen.
High Terrace	...	Southern Animals   <i>Trogontherium</i> , &c. <i>Neithina crenulata</i>	...	...	...	...	...	...	Chelleen.
Older Brickearths, Grays	...		Southern Animals	...	...	...	...	...	St. Achen I.
Ilford Brickearth	...	<i>Macacus</i> , <i>Protemys</i> , &c. <i>Valvata antiqua</i> .	<i>Rhinoceros hemitoechus</i>	...	...	...	...	...	St. Achen II.
Crayford Brickearth	...	No Northern Animals	<i>Spermophilus</i> , <i>Dirostonyx</i>	...	...	...	...	...	?
Third Terrace	...	...	Musk Ox and Northern Animals	...	...	...	...	...	Rock Shelter Group.
Buried Channel	...	Unknown	Reindeer and Boreal Animals and Plants	...	...	...	...	...	?
Modern Alluvium	...	Living Fauna	...	...	...	...	...	...	Magdalenien.
									Neolithic. Bronze Age. Iron Age.

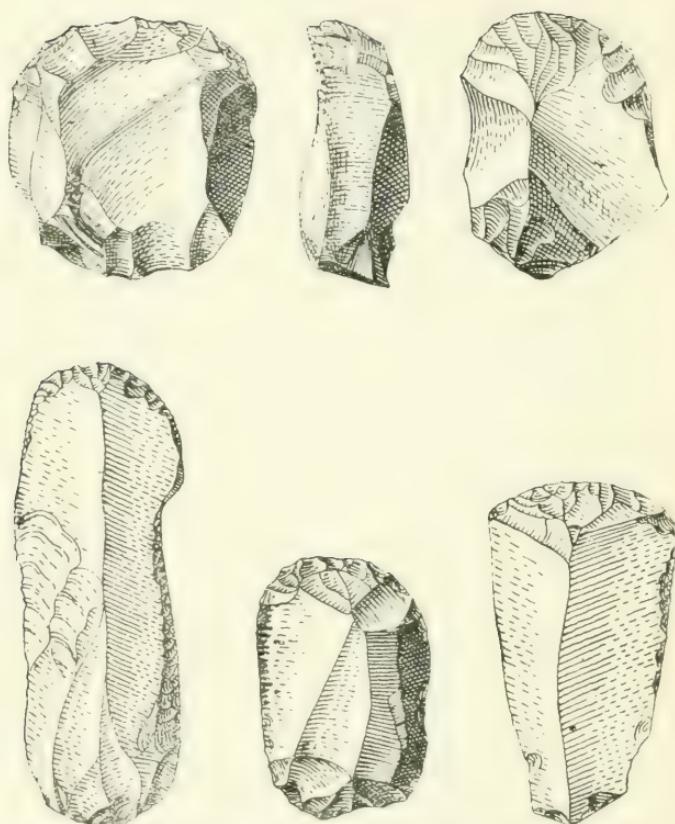


FIG. 45.—EARLY NEOLITHIC (CAMPIGNIEN) SCRAPERS FROM  
OBOURG. (After Mons. Rutot.) (Actual size.)

## APPENDIX II.

BROADLY speaking, South Africa may be divided into the western desert region, the north-eastern bush country, and the central high veld, which encroaches on the east and south. In addition, there are the mountain ranges of the extreme east and south, and the narrow low-lying coastal belt.

The sites described in this book are mainly situated on the high veld and in the bush country. Those who desire to gain an idea of the past and present environment of the sites on the high veld should read Chapters I. and V. of my *Geological and Archaeological Notes on Orangia*. The pre-historic bush country was probably no different to the present, and the following account from my diary of an expedition through a characteristic portion of it will present to the mind a very good picture of this type of country.\*

\* \* \* \* \*

[From Pietersburg, through Chunies Poort to Onverwacht, in the Lulu Mountains, thence up the Ohrigstad Valley and across the Drakens Berg to Leydsdorp and back to Pietersburg ; 9-25 Sept., '08. Party : Messrs. Nash and Hambidge and self with Kafir driver. Outfit : Wagonette and six mules.]

Pietersburg is the northern terminus of the Central South African railway system. The immediately surrounding country is a typical high veld like that of Orangia, and consists of undulating grass plains, broken by an occasional kopje. The geology, however, is different, the plains being mostly underlain by granite and the

---

\* The student should also read Mons. Christol's delightful book, *L'Art Dans L'Afrique Australe* (Paris : 1911), a work that ranks with Miss Tongue's *Bushman Paintings* and Dr. Randall-Maciver's *Mediaeval Rhodesia*.

kopjes mainly composed of schists. It is sparsely dotted with mimosa.

About twenty-five kilometres south-east of Pietersburg is a range of mountains trending roughly north-east and south-west, separating the high from the low veld. Our immediate objective was a pass through them known as Chunies Poort. We left Pietersburg at mid-day and arrived at our first camping place, the entrance to the pass, where there is a store, towards night. Starting early the next morning we entered the pass.

Chunies Poort begins as a breach in the precipitous quartzite escarpment and continues for a considerable distance as a picturesque gorge, thence developing into a narrow valley hemmed in on either side by rugged mountains. Its bottom is shared by the wagon track termed a road, and the Chunies River, which, though a raging torrent during the rainy months, is at this time of the year (the end of the dry season) merely a boulder strewn channel. Its only tenants are the baboon, leopard, and other wild animals. The gradient is all the way markedly downwards.

There are some old Kafir workings in copper-ore in the dolomite formation in the neighbourhood.

The pass is well clothed with bushes and small trees, and towards the further end the peculiar euphorbia and other more tropical forms appear.

After three hours' trek we reached a store by M'Phatle's location, well out of the pass, and outspanned for a couple of hours for breakfast. We were then in the low veld—a tract of undulating country covered with thorn-bushes and diversified by parallel ranges of kopjes. Thence we left the Chunies River, which turns abruptly eastward, and continued due south to the Olifants River, where we again outspanned. Taking advantage of a glorious moon-lit night we made a further trek and camped opposite Adriaan's Kop, a prominent landmark—interesting to the geologist as being a siliceous segregation in granite—a little distance up the river.

The wide, tree-bordered channel of the Olifants at this point is now only occupied by a series of crocodile-infested pools linked together by a feeble meandering stream.

The temperature up to now had been fairly high, but the next

day it was perfectly torrid, so we decided to give our animals a rest and spent the time fossicking around.

In the night we trekked by moonlight back down the Olifants, and the following day, when it was cool and windy, continued in the same direction until opposite the Lulu Mountains, where we crossed the river and camped.

The next day we proceeded along the foot of the mountains as far as the "farm" Twickenham. During the morning it was windy and overcast, but the weather improved in the afternoon.

The Lulu Mountains are the most conspicuous of a series of parallel ranges that constitute a tract of country of singular scenic beauty. They are composed of gabbro-diorite, a rock that, like granite, frequently weathers into fantastic piles that are specially the habitat of the equally bizarre euphorbia. Here and there one comes across a Kafir kraal, the huts of which are picturesquely perched among the great boulder-like outcrops.

At Twickenham we were hospitably received by Mr. Winter, junior, who is acting as collector of native hut rents for one of the big land companies owning some of the tracts of unutilizable wilderness, termed farms, in the neighbourhood, and who has a prettily situated little house perched on the lower slopes of the range and commanding a fine view of the valley between this and the next.

About three-quarters of an hour's drive further on is a characteristic pile-like kopje known to the Kafirs as Swali, where there is a natural recess or rock-shelter, on which are a number of Bushman paintings. They depict various antelopes, a large elephant, and men and women, in silhouette, some of the animals being very well represented. They are all in one colour—red—and have suffered much from the action of the atmosphere, most of them being now very indistinct. A large slab of the rock with paintings on has fallen away.

On the hill opposite (Mosego) a former chief of the local Kafirs, named Sekwati, is buried in the cattle enclosure of his kraal, and sacrifices of black goats or oxen are still made there when rain or other favours are wanted.

The next day we trekked on to Onverwacht, which we reached towards night, stopping on the way to see the paintings at Swali

kopje and making one outspan only, this being at a pool by a trader's store, about an hour and a half from our starting point.

We passed several Kafir kraals on the way, the females of which turned out to celebrate the occasion. One group of intombis, encouraged by a greeting in their own language, followed us for a long distance, and we caused considerable merriment by chaffing them. After much persuasion, for they have an inherent fear of all such contrivances as cameras, we induced them to submit to be photographed, though only by consenting to include ourselves in the group.

At Onverwacht we were hospitably entertained by old Mr. Winter, who is the father of our host of the night before and a gentleman of considerable education. One can imagine our surprise at coming across in these wilds a man conversant with the dead languages and possessing an extensive library of philosophical works! He came to the Lulu Mountains twenty-eight years ago as a missionary. Then the country teemed with elephants and big game of every description; now the largest animal met with, apart from an occasional stray impala or koodoo, is the rooi-rhebok. The lions have disappeared, but leopards are still plentiful. As a result of his intimate knowledge of the local Kafirs and their language, old Mr. Winter has become a storehouse of their traditions and beliefs, many of which are of great interest.

One tradition particularly attracted my attention. There are many old workings on iron and copper ores in the Lulu and neighbouring mountains, while the slags produced in smelting them are to be found on almost every "farm" in the vicinity. The tradition is that there was once a race of miners who were not Kafirs, in this part of the country, and the last of whom were killed by a former chief, Tulare. The Sekwati already referred to was the son of Tulare and father of Sekukune. The miners had guns which were buried by Tulare in a cave. Sekukune had the guns exhumed and converted into hoes. This last operation was performed by Sekukune's blacksmith, who was personally known to old Mr. Winter, and who described the guns to him. They differed from all the other guns with which he was acquainted in having long curved stocks. This seems to point to the miners being Arabs.

Tulare had his kraal on the Steelpoort River, and was noted as a kind, just, and powerful ruler. To be addressed as "Son of Tulare" is the greatest compliment that can be received by a Kafir of this neighbourhood.

Among the numerous interesting beliefs related to me by old Mr. Winter the primitive idea that the enviable characteristics of a dead man can be acquired by eating his flesh is noteworthy. This was done as recently as 1901 during the faction fights that accompanied the British-Boer war.

Old Mr. Winter seemed quite contented with his isolated existence, the presence of a large family, comprising wife, three more sons and a couple of daughters, being, no doubt, a compensating factor. All the sons are veritable giants, but with constitution weakened by the dread malaria.

The next morning, after making tracings of some Bushman paintings that occur on a rock-shelter near by on the mountain side, we proceeded on our journey in an easterly direction, leaving the Lulu Mountains at our back, and, after an excessively hot mid-day, during which we outspanned, and an overcast and cool afternoon, arrived at the Steelpoort River, where we camped at night.

Break of day revealed a pleasing and unexpected scene. Winding through the brown bush veld, like a great serpent, and following the course of the river, as far as the eye could see, was a long belt of green corn. Here and there in it nestled a homestead. Very restful was the sight of this strip of civilization traversing the wilderness. A similar scene was encountered at the Spekboom River, which we reached at mid-day.

It was again excessively hot. After a couple of hours outspan we continued our journey. First through a narrow and stone-strewn, but well-wooded, valley, then over a big hill-range with bare undulating surface, and, finally, down into flat bush country again. Darkness then overtook us, but we struggled on. After what seemed to us an interminable time we entered a little kloof in a randje, the country beyond which was lit up by the glare of a big grass fire, itself as yet concealed from us. An exciting dash through the further end of the kloof, where the flames, which were sweeping along the slopes on the other side of the randje, nearly

caught us, another quarter of an hour's trek through long tangled grass, and we had reached the Ohrigstad River, where we camped for the night.

In the morning we discovered that we had camped immediately opposite the site of Ohrigstad. This village was founded by the Boers in the early days but was abandoned after a long struggle with the dread malaria. Most of its former inhabitants lie in the graveyard. Of recent years malaria has been very much less prevalent, and as in the case of the Steelpoort and Spekboom Rivers, farmers have established themselves all along the river, which is now bordered by a pleasing belt of green corn. Close by was a homestead from which we obtained some bread.

Learning that there was a farrier across the river we inspanned after breakfast and went in search of him, our mules having already dropped no less than five shoes. We found him engaged in building a new house. He was a Canadian who had married a Boer girl and settled down there. Luckily he still had his tools. So after the usual cup of coffee we started to work, all lending a hand. The smithy was an open-air one sheltered by the spreading branches of a big marula, and consisted of a small prospecting forge and anvil. A heap of scrap iron supplied the material for their shoes. The task was completed by mid-day.

In the latter part of the afternoon we proceeded on our way up the Ohrigstad Valley. This portion of the journey was one of the most delightful that it has ever been my lot to undertake. The dusty wagon-track, sheltered from the blazing sun by overhanging trees, skirted on the one side the bush-covered slopes of the valley and on the other the waving corn of the broad alluvial flats that separated it from the tree-fringed river. How restful to the eye was the fresh green of that stretch of cultivated land after the monotonous brown of the parched wilderness. Here and there the road crossed the river where the latter zig-zagged over the flats.

At the first crossing beyond the village site we found the exit from the drift—a narrow cutting through the river bank—blocked by a big tree which, we learnt, the farmer had placed there with the aid of a team of oxen. Our views, however, as to the desirability of returning to the drift we had already crossed in the morning, not

coinciding, we chopped the tree into three pieces and removed them with the help of the mules.

We continued our journey till dark and started again at day-break, then outspanned for breakfast at a spruit. Ahead were the Drakens Berg. These we had to cross, but the narrow breach through which the river rushes affords no dry passage. So we continued along the old track which here leaves the valley on the right and crosses the mountains in a north-westerly direction.

A steep winding ascent, a long succession of ups and downs and what seemed to us an almost perpendicular descent, and we were once more on the banks of the Olifants, though some hundred and fifty kilometres away from the point where we had first encountered it.

I shall never forget that descent. The last ridge terminates in an abrupt escarpment, consisting of steep granite slopes capped by quartzite precipices and towering above the gently undulating bush country beyond. Our track led through a break in the cliffs to the top of the slopes and thence along a narrow kloof down them. It is a wonder to me that our wagonette was not smashed to pieces in its career down this dry stone-strewn boulder-blocked water course. A score of times it nearly capsized and a score of times the mules were all but a huddled heap under it.

The bottom of the pass brought us to the river at the point where it breaks through the mountains.

We camped on the river bank, just within the gorge, under one of those gigantic trees that are only met with along the big rivers, and amidst some of the finest scenery that I have ever seen. Close by were some fantastic baobabs and a Kafir kraal.

After a bathe in a rock-pool (it is not safe to go in the main stream on account of the crocodiles) and a good meal, by which time it was dark, we indulged in a well-earnt rest, watching the fire-flies and listening to the running water until sleep closed our eyes.

The next morning we set out to find a drift, but had not gone far before the disselboom was broken in crossing a small spruit : this we repaired. A little further on we reached a drift and crossed the river. We outspanned towards night at a spruit, overtaking a Kafir with his wife and daughter carrying his belongings, who were

making for Leydsdorp. Here we had to make big fires round the camp owing to the frequent presence of lions, which are very fond of mules, in the neighbourhood.

We left the spruit after breakfast and at mid-day outspanned at a tributary of the Macoutsi. Here we came across a four and a half metre python, which one of us shot, lying in wait for game at the bottom of a pool. Thence we trekked again and outspanned for the night at another tributary of the Macoutsi, where we secured a photograph of an interesting basic aphanite dyke traversing the granite. In the night a strong wind arose followed by rain.

The next morning we pushed on again. The sky was overcast and the weather cold. Yesterday the temperature attained 36° C. in the shade, to-day it is 11° C. We arrived at Leydsdorp towards night. On the way we saw a couple of hippotragi. The country traversed from the Selati River to Leydsdorp is beginning to get green. It was cold all day with fine rain.

This is my second visit to Leydsdorp. It is a fever-stricken spot surrounded by kopjes, and comprises a single street, built on one side only, the government offices, which occupy a building apart from the others, and a few scattered houses, mostly unoccupied. Its present white population, which we found congregated at the inn bar, number six souls in all. With the surrounding country bathed in mist (a very unusual spectacle) it looks very different to when I saw it last.

Only two of the mines in the neighbourhood—the Blue Jacket and the Sutherland—are now being worked, and only on a small scale.

Leydsdorp is at the south-western end of the Murchison Range. At the further end there is a little ruin that in neatness of construction resembles, but lacks the ornamentation of, the better ruins north of the Limpopo. It is perched on the top of a kopje, is oval in plan, measuring about 8 by 5 metres, and is built of squared slabs of schist. From it a good view can be obtained of the Palabora kopjes, where there are extensive old workings in iron and copper ore, and where the peculiar marali were formerly manufactured.

Two interesting occurrences of Acheulic implements, which I

discovered on the previous visit, may be mentioned here. A short distance east of the Selati river, at the point where it is crossed by the road from Leydsdorp to the Mashushamalà, one arrives at the foot of a broad terrace of river gravel. It is made up of well rounded pebbles of quartzite. There are no sections in it. A closer examination of the pebbles exposed at the surface shows that the greater number have been artificially chipped, the object of the stone workers clearly having been the manufacture of amygdaliths. They are without exception much worn. They are all rejects, not a single finished specimen being found, though I made a lengthy search. Their extraordinary abundance is attributable to the unsuitability

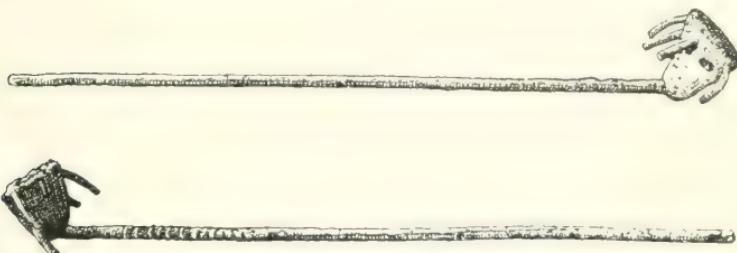


FIG. 46.—TWO MARALI FROM PALABORA (*After Dr. Haddon.*)  
*Supposed copper currency. The length of the straight portion is about 49 centimetres in each.*

of this particular kind of quartzite for the purpose. Their very worn condition suggests that they are contemporary with the deposition of the gravel, and if that is so they must be of great antiquity. I am not quite sure, however, that long exposure on the surface to weathering agencies might not blunt the edges of even so refractory a stone as quartzite, in which case the implements may have been made subsequent to the laying down of the gravel. It is a problem that can only be solved by making a section through the terrace.

About thirty kilometres further on in the same direction, on the left bank of the Olifants, is the "farm" Parsons. Just east of this the river makes a big bend. The hill in this bend is strewn with small banded jasper-ironstone pebbles, which are probably the

remnants of an old terrace. Here and there a quartzite pebble of larger size is to be found. Many of these last have been worked into amygdaloliths, and some into the broad form of celt. They are all very crude, probably on account of the unsuitability of the particular kind of quartzite, and are all much worn.

The next morning we continued our journey, outspanning by the store on the Thabina river ( $3\frac{1}{2}$  hours distant) for breakfast and reaching the Letsetele River, where we camped, towards night. All day it was overcast, with a cold wind and some drizzle.

Instead of, as before, taking the direct road from Thabina store to Pietersburg, it was decided to take the much longer, but easier, road that goes by the Tzaneen estate and thus avoid the there steep ascent from the Groot-Letaba Valley. We found this road good but heavy owing to the wet.

Next morning we started off again and outspanned for breakfast just across the Groot-Letaba by the store opposite the tobacco factory of the Tzaneen estate.

In spite of the extremely unhealthy climate and the distance from railways and markets, there are quite a number of farmers in this part of the valley. Cotton, tobacco, fibre, coffee, tea, and rice all thrive there, but have not yet been cultivated on a commercial scale.

After inspecting the estate we proceeded till night, when we reached another store where we camped.

The same peculiar weather continued throughout the day, but the delightful scenery through which we passed amply compensated. This section of the country is very rugged and well-wooded, and under the present abnormal meteorological conditions, with its dank vegetation, clammy atmosphere and mist-draped hills, reminded me forcibly of Grampian scenery. But for the paw-paws, bananas, palms, and other tropical types here and there, the resemblance would have been complete.

The next day we went on to the Koodoos River, where we outspanned, then over to and up the Middle-Letaba Valley and thence up a long sinuous path to the high veld again.

The high veld here is not quite typical, not being nearly so high, for instance, as at the point where the other road reaches it,

and hence one finds it dotted with a mixture of thorn-bushes and euphorbias.

The weather had improved considerably, but the sky was still overcast. We camped for the night at Kelly's store, on the farm Netrecht.

In the morning we were up early, made a three hours' trek and outspanned opposite a Boer homestead. We were now on typical high veld again with only occasional patches of sparse bush. The sky was again clear and the country bathed in its accustomed sunshine. Another three hours' trek and we were back at Pietersburg.

---

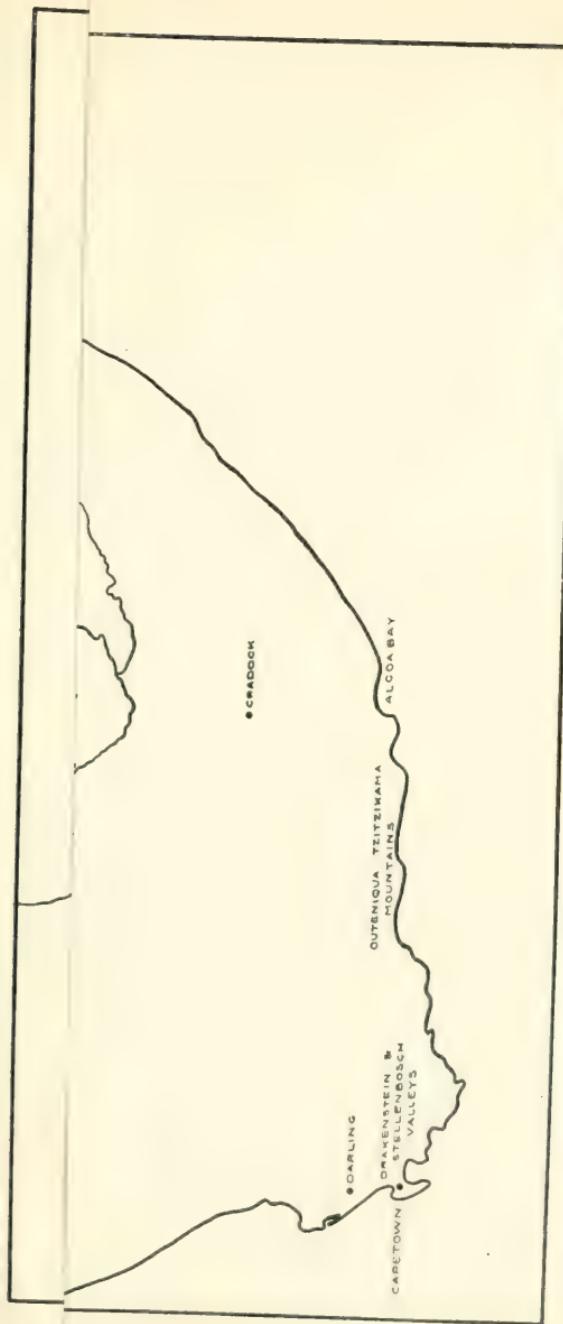
## INDEX OF LOCALITIES.

(Names of Farms in Italics.)

	PAGE.		PAGE.
Adrián's Kep	104	<i>Elandsfontein</i>	46
Algoa Bay	18	Elands-Rustenburg River	18
Asbestos Hills	48	Embaba Valley	22, 28
<i>Baviaanskraal</i>	44	Ficksburg	44
Barberton	47	Fairiesburg	44
Barkly	25	Jaikie Mine	80
Bezuidenhout Valley	21	Griquatown	49
<i>Bosfontein</i>	44, 62	Groot-Letaba Valley	113
Blauw Berg	50	Gwelo	18
<i>Blauwbaas-hoëtt</i>	66	Hart River	48
<i>Blauwbank</i>	48	Inyanga Ruins	82, 83
<i>Blinkkloep</i>	47, 60	Johannesburg	19
Bloemfontein	39, 40, 64	Khami Ruins	82, 90
<i>Bloemhoësch</i>	46	Kimberley	31
Boshof	40, 44	<i>Kleinbuffelspruit</i>	49
Bulawayo	47	Klerksdorp	57
Bumbusi Ruins	59	Koffyfontein	44, 62
Caledon River	18	Konati River	18
Campbell	12	Koodoos River	113
Campbell Rand	12	<i>Kranzfontein</i>	49
Cape Flats	29	Krungersdorp Valley	21
Capetown	29, 50	Ladybrand	44
Carolina	49, 70, 73	<i>Leijfontein</i>	12
Chum Ruins	82	Letsetele River	112
Chunie's Poort	104	<i>Leuwfontein</i>	60
Coldstream Cave	52	Leydsdorp	110
Cradock	47	Limpopo River	81
Darling	46	Luckhoff	26
Delagoa Bay	50	Lulu Mountains	69
<i>Desvilliersrust</i>	42	Macoutsi River	110
Dhlo-Dhlo Ruins	82	Magalakwin River	18, 87, 93
<i>Douwskloot</i>	49	Mashushamala	111
Douglas	66		
Drakens Berg	109		
Drakenstein Valley	21		

	PAGE.		PAGE.
Masibi's Location ...	87	Rooi Berg ... . . . .	81
Matopo Hills . . . .	49	Rooipoort ... . . . .	60
<i>Meerlandslei</i> . . . .	42	Rustenburg ... . . . .	81
Middle-Letaba Valley . .	113	Salt River . . . .	29
Modder River . . . .	33	Salisbury . . . .	18
Modderpoort . . . .	44	Selati River . . . .	18, 111
Mosego Hill . . . .	105	Selons Valley . . . .	81
M'Phateles Location . .	104	Signal Hill . . . .	46
M'Popoti Ruins . . . .	82	Spekboom River . . . .	107
Mundie Ruins . . . .	82	Stelpoort River . . . .	107
Murchison Range . . . .	110	Stellenbosch Valley . . . .	21
Nanatali Ruins . . . .	82	Steynsdorp Valley . . . .	22, 81
<i>Netrech</i> . . . .	113	Swali Kopje . . . .	105
Niekerk Ruins . . . .	87		
Ohrigstad Valley . . . .	108	Taaibosch Spruit . . . .	35
Olifants River . . . .	18, 48	Thabina River . . . .	112
<i>Onverwacht</i> . . . .	106	Touw River . . . .	51
Outeniqua Mountains . .	51	Twickenham . . . .	105
Orange River . . . .	18, 36	<i>Tweelingstontein</i> . . . .	44
Parsons . . . .	111	Tzitzikama Mountains . . . .	51
Palabora Kopjes . . . .	81		
Petrusburg . . . .	40	Vaal River . . . .	18, 25, 48
Pietersburg . . . .	103, 113	Vereeniging . . . .	25, 59
Potgietersrust . . . .	87, 93	Victoria Falls . . . .	20
Prieska . . . .	36, 48	<i>Uitkantstein</i> . . . .	46
Pretoria . . . .	16	<i>Uoornuitzicht</i> . . . .	42
Ramoo Kop . . . .	88, 89, 91	Walfisch Bay . . . .	50
Rhodes' Grave . . . .	49	Warmbaths . . . .	81
Riet River . . . .	33	<i>Waterval</i> . . . .	46
<i>Rietpan</i> . . . .	40	Witwaters Rand . . . .	22, 46
Riverton Island . . . .	31	Wolmaransstad . . . .	38, 47, 60
Robinson . . . .	23	Zambezi River . . . .	18, 59
Roode Kop . . . .	19	Zimbabwe Ruins . . . .	82, 86, 93
		Zwartkops River . . . .	18





PLAN SHOWING PLACES AT OR NEAR WHICH THE STONE AGE REMAINS  
WERE FOUND.

1. *Map of Project on South Africa.*

# SOUTH AFRICA



PLAN SHEWING PLACES AT OR NEAR WHICH THE STONE AGE REMAINS WERE FOUND.

BY THE SAME AUTHOR.

## Geological & Archæological Notes on Orangia.

WITH ILLUSTRATIONS.

**PRICE 10/-.**

.. The present volume is devoted to Orangia, where the Author has resided in practice as a mining engineer; his work gave him excellent opportunities for observation and research, and he has used his chances with admirable industry and judgment."—Prof. GREGORY, F.R.S., in *Nature*.

---

## The Mineral Industry of Rhodesia.

INTERLEAVED.

**PRICE 8/6 NET.**

A work which in every respect seems to aim—and, we think, with conspicuous success—at being of real working assistance to all who are interested in the rich mineral resources of Rhodesia. As to the qualifications of the author, it is unnecessary to enlarge upon these, since he is as well known in England as in the sub-continent as an expert in the geology, archæology, mineralogy, and history of South Africa . . . . The book is a most valuable one, and we have no hesitation whatever in recommending it alike to students, to would-be prospectors, to miners, to intelligent investors, and to all who are interested in the resources and development of Rhodesia.—*Standard of Empire*.

---

LONGMANS, GREEN & CO.,

39, PATERNOSTER ROW, LONDON; NEW YORK, BOMBAY, AND CALCUTTA.

BY THE SAME AUTHOR.

# THE ORE DEPOSITS OF SOUTH AFRICA.

*Part I.—BASE METALS.*

WITH DIAGRAMS.

**PRICE 5/- NET.**

"This volume, the author states in his preface, is intended to meet a demand among those technically connected with the mining industry, for a co-ordinated and condensed account of the base-metal ore-deposits at present known in South Africa. It is also intended as a guide to the prospector. The author claims that only an elementary knowledge of geology and some mining experience are necessary in order to understand it, and that, with these qualifications, it will materially assist the prospector in his search for metalliferous mineral occurrences. . . . This volume constitutes a work of reference that no one interested in the mining industry can afford to be without. It is at once a concise and co-ordinated description of the different known occurrences, a complete record of output, and a guide to the scattered literature of the base metals of South Africa"—*South African Mining Journal*.

*Part II.*

## THE WITWATERSRAND AND PILGRIM'S REST GOLDFIELDS, AND SIMILAR OCCURRENCES.

WITH TWO LARGE GEOLOGICAL MAPS AND DIAGRAMS.

**PRICE 5/- NET.**

CROSBY LOCKWOOD & SON,  
7, STATIONERS' HALL COURT, E.C., & 121A, VICTORIA STREET, S.W., LONDON.

# THE STONE IMPLEMENTS OF SOUTH AFRICA.

*SECOND EDITION, REVISED AND ENLARGED.*

WITH ILLUSTRATIONS.

**PRICE 10/-.**

"Our knowledge of the prehistoric period of South Africa, like that of other parts of the world, is mainly derived from the almost imperishable stone implements which were then used, and which remain when much else has gone. In this volume the author gives a co-ordinated account of his different discoveries in South Africa. The new edition describes a large number of fresh finds, and includes many new illustrations. One of the most striking features is the very wide geographic distribution of Mr. Johnson's finds, which has afforded a sound basis for classification. Four distinct periods are now recognised—the Eolithic, Stepyic, Acheulic, and Solutric. Very interesting are the reproductions of aboriginal paintings, peckings and engravings, which were contemporary with the implements of the newest period."—*South African Mining Journal*.

LONGMANS, GREEN & CO.,  
39, PATERNOSTER ROW, LONDON; NEW YORK, BOMBAY AND CALCUTTA.

Printed by EDWIN SEARS & CO., 4, Dorset Buildings, Salisbury Square, London, E.C.





PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

H&SS  
A  
5066

